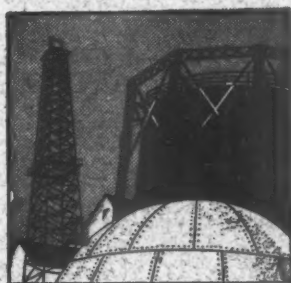


AMERICAN GAS ASSOCIATION MONTHLY



What Is
Ahead of Us?

BERNARD J. MULLANEY

Putting
All the Gas
Dollars To Work

SAMUEL INSULL, JR.

Gas Necessary
in Conversion of
Aluminum into
Kitchenware

J. B. NEALEY

Annual Convention of
Natural Gas Men
to Open May 5 at
New Orleans

The
of Economics
Load Building

OSCAR H. FOGG

A Recent
Development
In Gas Purification

A. M. BEEBEE

Treatment in
Cases of Carbon
Monoxide Poisoning

CECIL K. DRINKER, MD.
THOMAS J. SHAUGHNESSY



April, 1930

Applications for Exhibit Space at A. G. A. Convention Coming in

THE 1930 prospectus announcing arrangements for the exhibits to be held in connection with the Twelfth Annual Convention and Exhibition of the American Gas Association, which will take place in the Atlantic City Auditorium, Atlantic City, N. J., October 13 to 17, inclusive, has been published by the committee in charge.

All applications for space and other correspondence should be addressed to C. W. Berghorn, Director of Exhibits, American Gas Association, 420 Lexington Avenue, New York City.

Applications for space already are being received at a rapid rate, and indications are that there will be a record-breaking display of gas appliances, equipment, processes, etc.

The Exhibition Committee is composed of the following members: F. G. Curfman, Chairman; Robert S. Clarke, Jr., E. S. Dickey, A. H. Schroth, W. H. Tappan and J. S. Tatman.

AMERICAN GAS ASSOCIATION MONTHLY

Allyn B. Tunis, Editor

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Volume XII

APRIL, 1930

Number 4

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The Association does not hold itself responsible for statements and opinions contained in papers and discussions appearing herein.

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Our Own Who's Who

LIX

Herman Russell

THIRTY years in the gas and electric utility business culminated for Herman Russell on December 6, 1929, when he was made president of the Rochester Gas and Electric Corporation. Following his graduation at the University of Michigan with a B.S., 1898, Mr. Russell pursued post-graduate work for which he received the degree of M.S. in 1899 and was awarded the first scholarship offered by the Michigan Gas Association, in 1900.

For five years, Mr. Russell associated himself with utilities in Detroit, San Francisco, and Cincinnati, and then began his work with the Rochester utility as assistant superintendent of gas plants. He successively became superintendent, assistant general manager, general manager, vice-president and general manager and finally president.

Mr. Russell is affiliated with many technical and engineering organizations and societies, including the American Gas Association, Empire State Gas and Electric Association, National Electric Light Association and others. He is a former president of the Rochester Chamber of Commerce, as well as president of the Rochester Civic Improvement Association, Inc., and president of the Rochester Industrial Development Association.



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AMERICAN GAS ASSOCIATION MONTHLY

VOLUME XII

APRIL, 1930

NUMBER 4

Natural Gas Men Turn Eyes Toward New Orleans

Annual Convention Opens May 5

EYES of all natural gas men today are turning toward New Orleans, La., where this great branch of the American Gas Industry will assemble on May 5 in Annual Convention. They will gather to discuss topics and conditions confronting their industry, which not only is carrying out the greatest expansion in its history, but today has reached a point where it is an important factor in a large proportion of the Nation's industrial life.

With the spread of the natural gas pipe lines, their networks today are covering territory far remote from the fields of California, Texas, Louisiana, Oklahoma, Arkansas, Kansas, Ohio, Kentucky, Indiana, West Virginia and Pennsylvania. It has been said, "as natural gas develops, so develops industry."

For four days—May 5 through May 8—natural gas representatives will go into the details of the maze of questions which confront their industry. Almost overnight new developments appear, company names, well-known for years, vanish, absorbed by the growing need for finance and opera-

tion on an increasingly larger scale.

Activities are widespread in all producing areas and this condition presents problems, subjects and conditions

made to take care of not less than 1,500 representatives at New Orleans.

While this Convention will be known as "The Western Natural Gas Convention," it will be open to all representatives of the industry. It is sponsored by the Natural Gas Department of the American Gas Association, and is the twenty-fifth consecutive annual meeting of this branch of the industry, and the third of the Natural Gas Department.

Convention headquarters will be at the Hotel Roosevelt, and in charge of E. J. Stephany, Secretary of the Natural Gas Department. Registration, for which there will be a fee of \$3 per person, without additional charge for any of the various entertainment features,



H. C. Morris



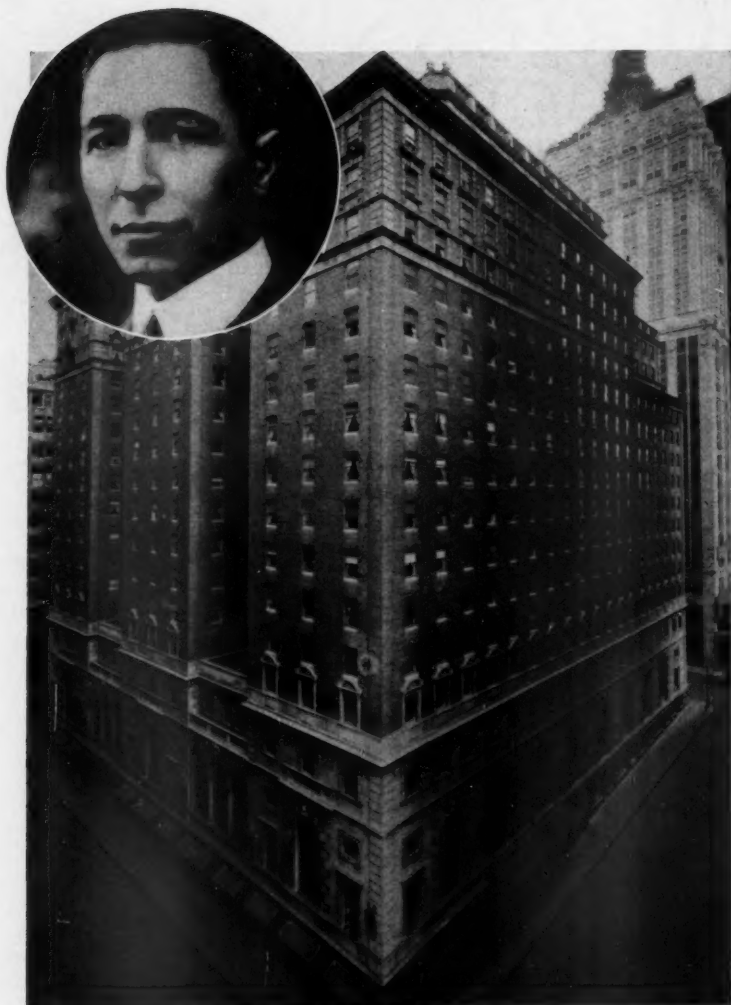
B. J. Mullaney

to which natural gas leaders are giving their earnest thoughts and efforts. Many of them have been engaged in carrying out experiments, the results of which promise to have far-reaching effects upon future expansion of natural gas lines.

Some of the outstanding men in the industry have consented to give the benefit of their new-found information to the Convention, and for this reason plans are being



Alexander Forward



Natural Gas Convention Headquarters, Hotel Roosevelt, New Orleans. Insert, E. J. Stephany, Secretary Natural Gas Department, who will be in charge of headquarters during Annual Meeting

will take place in the ballroom on the first floor. All business sessions will take place in the Tip Top Inn, on the twelfth floor of the Roosevelt, and will include features of outstanding interest to those in attendance. The list of speakers is an impressive one.

B. J. Mullaney, President of the American Gas Association, Alexander Forward, Managing Director, and H. C. Morris, of Dallas, Chairman of the Natural Gas Department, who will preside at most Convention sessions, are on the program to make addresses.

E. L. Rawlins, of the United States Bureau of Mines, Bartlesville, Okla., will present a paper on "Gas Field Studies."

Dr. J. B. Garner, of the Peoples Gas Company, Pittsburgh, Pa., will speak on "Leak Detection and Prevention in Congested Cities."

W. M. Little, Industrial Engineer of the Cities Service Gas Company, Bartlesville, will discuss "Development of Larger Industrial Sales."

R. M. Redding, General Superintendent, the Dallas Gas Company, Dallas, Texas, will be heard on "Application of Degree Day Deficiency to Computing Domestic and Heating Loads."

R. E. Haas, Director of Public Relations, Columbia Gas & Electric Corp., New York, N. Y., will deliver a talk

on "Activities of a Public Relations and Advertising Department."

E. N. Watkins, Arkansas Natural Gas Corp., Shreveport, La., is expected to present a paper on "Uniform Classification of Accounts."

One session of the Convention, over which J. D. Creveling, Manager of the Natural Gas Division of Henry L. Doherty & Company, New York, N. Y., will preside will be given over to an open forum.

J. H. Dunn of the Lone Star Gas Company, Dallas, will lead a discussion on "Handling Water in Wells and Field Drips"; H. L. Gaibry, Chief Engineer, New Orleans Public Service, Inc., New Orleans, will lead a discussion on "Recent Progress in the Saturation of Natural Gas with Oil and Water"; George B. Sheppard, Engineer, United Gas Company, Houston, Texas, will lead a discussion on "The Relative Advantages of Displacement and Orifice Meters."

The Program Committee is hard at work arranging the many details in connection with the Convention. Inasmuch as the topics to be presented will be of the utmost importance to the industry, careful study is being given this subject by the committee. Topics of interest to commercial managers will be a feature. Papers on this will be presented by F. M. Rosenkrans, of Kansas City; W. J. McIntyre, of Shreveport, La.; Miss A. Berry, of San Antonio, Texas, and others.

The Program Committee is as follows:

N. C. McGowen, Louisiana Gas & Fuel Co., Shreveport, La.

H. L. Montgomery, Cities Service Gas Co., Bartlesville, Okla.

T. J. Strickler, Kansas City Gas Company, Kansas City, Mo.

L. Fitzpatrick, Utah Gas & Coke Company, Salt Lake City, Utah.

George Wehrle, Public Service Company of Colorado, Denver, Colo.

W. A. Dunkley, Memphis Power & Light Company, Memphis, Tenn.

A. E. Merchant, New Orleans Public Service, Inc., New Orleans, La.

A. C. Howard, Dixie Gas & Fuel Company, Houston, Texas.

F. L. Chase, Lone Star Gas Company, Dallas, Texas.

While there will be no exhibits at the Convention, those in attendance will find plenty to occupy their time. There will be a meeting of the Main Technical and Research Committee at

10:30 o'clock, Monday morning, May 5. The Managing and Advisory Committees have been called to meet at 5:00 o'clock the same afternoon.

Reports of these and subcommittees are expected to be of unusual interest this year

on account of the satisfactory progress which has been made, and because of the nearness to solution of several outstanding problems affecting the industry.

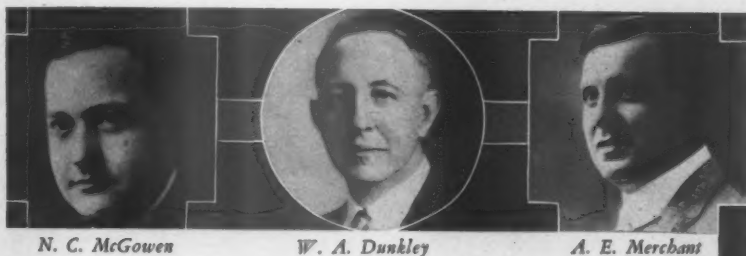
Entertainment features of the program are expected to arouse unusual interest. These include a sightseeing water trip on Monday afternoon, May 5. Those attending the Convention will board the steamer, *Capital*, and enjoy a trip of more than two hours,

wives will attend a theatre party.

There will be no banquet at this year's Convention.

Those who expect to attend the meeting are being urged by the committees in charge to make their hotel reservations at an early date. Arrangements have been made with the Railroad Passenger Association to extend

Program Committee



N. C. McGowen

W. A. Dunkley

A. E. Merchant

which will give them ample opportunity to see all of the points of interest in New Orleans Harbor, and the lower Mississippi River. That night there will be a ball at the Hotel Roosevelt.

Tuesday morning, guests of the delegates will be taken on a tour through the old French quarter of New Orleans. Luncheon will be served in an open courtyard. Visitors will be free Tuesday night to select their own sightseeing trips or other forms of entertainment.

Wednesday night, there will be a stag smoker for the men, while their

Hotel Accommodations At New Orleans

	Rates with Bath	Rates without Bath
De Soto, 420 Baronne Street.....250 Rooms	Single \$3.00 to \$4.00	\$2.00 to \$2.50
	Double \$4.00 to \$7.00	\$3.00 to \$4.00
Jung, 1500 Canal Street.....700 Rooms	Single \$3.00 and \$3.50	None
	Double \$5.00 and \$6.00	None
Marberc, 1300 Canal Street.....300 Rooms	Single \$2.50 to \$4.50	None
	Double \$4.00 to \$6.00	None
Monteleone, 214 Royal Street....600 Rooms	Twin Beds \$6.00 and \$7.00	None
	Single \$3.50 and \$4.00	None
	Double \$5.00 and \$6.00	None
	Twin Beds \$6.00 and \$7.00	None
Roosevelt700 Rooms	Single \$4.00 to \$6.00	None
	Double \$6.00 to \$7.00	None
Saint Charles, 211 Saint Charles Street600 Rooms	Twin Beds \$8.00 to \$9.00	None
	Single \$3.00 and Up	\$2.00 and Up
	Double \$5.00 and Up	\$3.50 and Up

Write direct to the hotel selected in making reservations, indicating second choice of a hotel. If the space desired is not available, reservations will be made at some other hotel.

to delegates the privilege of reduced fares under the certificate plan, as at former conventions. Members are urged to secure identification certificates when purchasing transportation.

This year an effort is being made

to give the natural gas Convention unusual publicity and to that end, the following Publicity Committee is serving:

J. C. Barnes, Chairman, New Orleans Public Service, Inc., New Orleans, La.

R. J. Daugherty, Empire Companies, Bardsville, Okla.

John Fletcher, Arkansas Natural Gas Corporation, Shreveport, La.

Wm. C. Grant, 1915 Wood St., Dallas, Texas.

C. D. Greason, Gas Service Co., Kansas City, Mo.

Reid MacBeth, Oklahoma Natural Gas Corporation, Tulsa, Okla.

Following is the Committee on Arrangements and Entertainment:

A. B. Paterson, Chairman, New Orleans Public Service, Inc., New Orleans, Louisiana.

Wallace Blocker, Houston Natural Gas Company, Houston, Texas.

O. Christopher, Montana Petroleum Company, Baker, Montana.

R. W. Gallagher, East Ohio Gas Company, Cleveland, Ohio.

N. K. Moody, Prairie Oil and Gas Company, Independence, Kansas.

R. C. Hoffman, Jr., Southern Cities Public Service Co., Atlanta, Georgia.

J. R. Munce, Arkansas Natural Gas Corporation, Shreveport, Louisiana.

Continued on page 182)



L. Fitzpatrick

George Wehrle

H. L. Montgomery



A. C. Howard

F. L. Chase

T. J. Strickler

New Orleans—

Setting of 1930 Natural Gas Convention Among Scenes Which Saw History in the Making.

AMERICA'S Most Interesting City" is the name visitors have given New Orleans. Next month members of the Natural Gas Department of the American Gas Association who attend the 1930 convention will discover why.

The name was apt, because—

It was here they found unchanged—preserved through more than a century—the buildings, the entire settings in which the dramas, the romances, the tragedies of bygone ages were enacted.

In New Orleans the imagination unaided can construct again the very scenes the sightseer has read about, talked about, heard about since childhood days in the history class—

The fantastic nights of the famous quadroom balls—the awesome days of slave auctions and later the days of the carpetbaggers—the picturesque pirates of Lafitte as they came to the aid of Andrew Jackson in the Battle of New Orleans—the beautiful typical Southern manses of the "land o' cotton" and sugar cane—the curious courtyards and iron-trellised balconies of the ancient days of Spanish and French rule—scenes without end.

In the waters that surround New Orleans are to be found contrasts that few other spots in the whole wide world can afford—

Sluggish, silent bayous—the stillness broken only by the occasional splash

of an alligator or a gar—winding their weary way beneath the inter-laced branches of century-old oaks and cypresses—with long strands of Spanish moss dangling from their limbs.

These are the scenes through which Longfellow sent Evangeline.

But close your eyes for an instant and you are wafted as on a magic blanket as to the white shell beach of Lake Pontchartrain or to the booming surf of Grand Isle, or to the beauties of the Gulf Coast.

In the teeming commerce of the broad "Father of Waters"—the world's greatest river—there is romance to be found—where the ships of all the world meet and exchange the products of all its nations.

Thus in bold strokes is painted the picture of New Orleans.

Now to fill in with touches of detail—

The City with a Dual Personality

Nestling in the heart of the NEW ORLEANS of today, of New Orleans, America's Second Port,—practically as it was in the days of Baron de Carondelet and the Louisiana Purchase—is the *Vieux Carre* or The Old Quarter—the New Orleans of a century or more ago.

Outside the boundary of Esplanade Avenue, the New Basin, Canal Street



OLD ABSINTHE HOUSE

Celebrated rendezvous of the bibulous; built in 1796; at Bienville and Bourbon Streets; now headquarters of Vieux Carre Association.

and the river is a city that is growing and that heralds its opportunities to the world—a city that looks to the future.

Within the boundaries is a city of the past—a city that whispers reminiscences of olden days of luxury and languor.

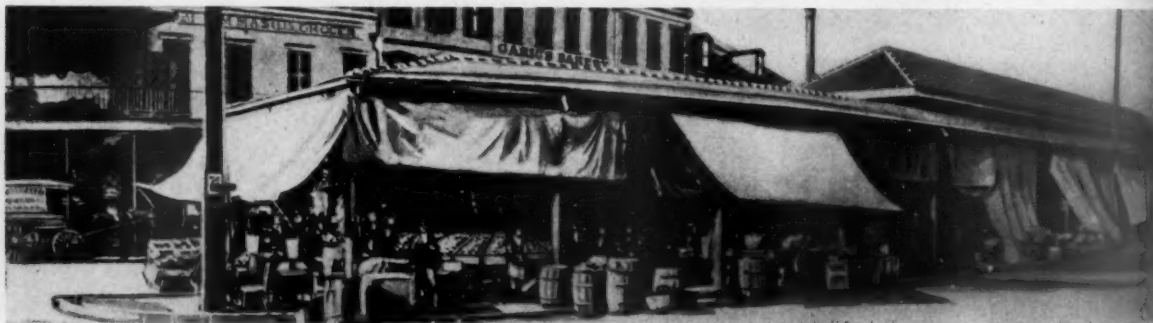
The Place d'Armes

Just as the *Vieux Carre* is the heart of New Orleans, the *Place d'Armes* is the heart of the *Vieux Carre*.

It was within and around the old tall iron pickets that marks the square of the *Place d'Armes* that most of the incidents recorded in the history of New Orleans took place.

It was in this historic spot that the Louisiana Territory, constituting most of the Mississippi Valley, was transferred three times—from France to Spain, from Spain to France, and finally with the Louisiana Purchase to the United States.

It was around Jackson Square—as the *Place d'Armes* is known now—that the gay social life of the city of old was centered.



Old French Market

The St. Louis Cathedral

Facing the place on one side is the old St. Louis Cathedral on the site selected by Bienville—the city's founder—205 years ago.

The foundations upon which the Cathedral stands today were laid in 1724. Changes and additions have been made but the Cathedral stands



ST. PETER STREET

Showing, to the right, old Spanish Arsenal; to the left, Little Theatre; typical Vieux Carre Street scene.

practically the same as it has stood for close to two centuries.

In the crypt of the old church are the tombs of many men in history, notably Don Andraes Almonaster y Roxas.

The Cabildo

Beside the Cathedral on one side stands the Cabildo, for nearly a century the seat of government, and on the other stands the Presbytere—two of the most interesting buildings in Mississippi Valley history.

The buildings were erected by Almonaster y Roxas during the regime of Spanish Governor Baron de Carondelet in 1795. It was in the *Sala Capitular*—main chamber—of the Cabildo that the Louisiana Purchase—later divided into fourteen States—was transferred to the United States by representatives of Napoleon and Thomas Jefferson.

The Presbytere—on the other side of the Cathedral—was built a few years later as the house of the Capuchin priests. It was later occupied by the state civil courts. Both buildings now contain the many interesting exhibits of the Louisiana State Museum.

Flanking the *Place d'Armes* on both sides are the buildings that Don Almonaster y Roxas erected in 1849 in honor of his daughter, the Baroness de Pontalba, who would not have John

McDonogh, the founder of New Orleans schools, as a suitor.

In the old days these buildings, now tenements, were sumptuous apartments and still bear in the iron scrollwork of the balconies the monogram of their noble mistress.

In the center of the square stands the famous equestrian statue of Andrew Jackson, the work of Clark Mills, set up in 1856 at a cost of \$30,000, and upon the base of which General Butler during the Civil War cut the words, "The Union Must and Shall be Preserved."

In St. Peter Street, one block from the square, is the quaint old house in which Jenny Lind lived during her years in New Orleans.

At 514 Chartres Street, two blocks from the square, is the Napoleon House, to which Girod, a wealthy merchant, and Dominick You, one of Lafitte's pirates, planned to bring Napoleon from St. Helena.

The French Market

As interesting today because of the exotic life that teems through, in and around it, as it is because of its historic significance, is the French Market, just off the northwest corner of the *Place d'Armes*.

The people of many nations and many races barter for the necessities of life in the old buildings. Sunday mornings when the carts of foreign truck farmers surround the place is the best time to see the French market.

The market was first built here by the Spaniards in 1791—139 years ago. Part of the old structure was replaced in 1813 and a vegetable market was added in 1822, and the bazaar in 1872.

No more colorful picture of life can be found anywhere.

Little Italy—where thousands of Italian families are housed in tenements—bounds the market on one side.

The Archbishopric

The oldest building in the Mississippi Valley is the Archbishopric, erected in 1727 on Chartres Street, between Hospital and Ursuline.

The seminary connected with the Archbishopric was built early in the Eighteenth Century on the site of a chapel erected in 1787 by Don Almonaster y Roxas for the Ursuline Nuns.

The church fronting the street—the Church of St. Mary—was built in 1846, and contains many interesting relics.

The Beauregard House

Another link to the days of yore stands across Chartres Street from the Archbishopric. It is the house in which Paul Morphy, the world's greatest chess player, was born.

It was later the home of General Beauregard, who directed the Confederate forces at the Battle of Shiloh. Until the Eighteenth Amendment was enacted it was occupied by Silecian wine merchants.

Old Absinthe House

More than a century of dripping absinthe—since 1798—has worn a depression over two inches deep in the marble counter of the bar of the Old Absinthe House at Bourbon and Bienville streets.

It was here that many of the famous old drinks of days that are no more were originated.

The construction of the Old Absinthe House—like that of many others—is distinctly European and unlike anything seen elsewhere in America.



NAPOLÉON HOUSE

Said to have been erected early in the Nineteenth Century by Governor Girod as a refuge for Napoleon when his rescue from St. Helena was planned in New Orleans; corner Chartres and St. Louis Streets.

*What Is Ahead of Us?

MY appearance here is attended by mixed feelings. Appreciation of your courtesy in having me is mingled with trepidation on at least two counts. I realize that I am facing one of the oldest, best organized and most effectively functioning regional utility associations in the country, and that its members are mostly practical utility operators of long experience who have discarded more knowledge of the business than I will ever know. Then, as a gas man, I come among you as a child among bearded philosophers.

Here at the heart of the tremendous oil and natural gas industries, it would be presumptuous of me, not to say ludicrous, to assume a pontifical advisory or lecturing tone. You natural gas men airily toss off production and transmission and sales output figures that make us ordinary manufactured gas men dizzy. You now have to use four sets of ciphers after the initial numeral—trillions I believe the term is—in stating natural gas production, while we manufactured gas people still have to speak in terms of ordinary billions.

Your program says I am to discuss "What is Ahead of Us." There is a trick in that phraseology. It is elastic and expansive.

Take it as a question in its simplest form, and the obvious answer is: "Nothing and nobody is ahead of us." The public utility business and the people in it lead the procession.

Take it as a query of broader import, or as an assertion, in relation to forecasting the future, and we enter a field wider than the ordinary imagination can span. In the light of what most of us have personally seen happen in the various branches of the public utility business, he must be rash who would venture to forecast in terms

LET me draw your attention to certain circumstances in relation to which, I think, we have been entirely too pussy-footed. I mean the Federal Trade Commission inquiry at Washington, which has been going on for about two years. . . . Any fair-minded and analytical examiner of those proceedings will see that something more than 99 per cent of the so-called "disclosures" of "power trust" iniquity, as fed out to the public, have been misrepresentations and frequently falsehoods. . . . The Federal Trade Commission inquiry has demonstrated the existence of an organized, definite and consciously directed propaganda effort to promote "socialization"—the government ownership and operation—of certain basic industries, including ours. This program is shrewdly conceived and skillfully promoted. Its existence, "socialization" program, which many of us have been disposed to treat lightly, becomes of graver import when we look at it in connection with another circumstance. In the Senatorial resolution ordering the current inquiry, the Federal Trade Commission was directed to inquire into what had been done by public utilities to affect public opinion on government ownership. As the Federal Trade Commission interprets that part of the Senatorial enabling

resolution to which I have referred—and you will find this interpretation more than once in the official record of the inquiry—whatever we do, directly or indirectly, to cultivate good will for our business, is in effect "propaganda against government ownership." In other words, when we advertise our service and its efficiency, when we announce an addition to production and distribution facilities for bettering the service, when we open a new office or stay open after hours for the convenience of customers, and so on—even when we announce a reduction in rates—we are, in effect, as interpreted by the Federal Trade Commission, engaging in "propaganda against government ownership." I am not exaggerating. . . . This would seem to be something for us and all other business people to think about. It applies to other businesses as well as to utilities. It applies to railroads, banking, insurance, steel, coal and oil. If the reasoning I have indicated be permitted to go unquestioned, we may be farther than we realize on the road to "socialization"—government ownership and operation—of industry. I am not seeing ghosts; only reminding you that an ounce of prevention is still worth a pound of cure and that neglected disorders can become chronic.—B. J. Mullaney.

what may be ahead of us in change and development.

By BERNARD J. MULLANEY,
President, American Gas Association

character and purpose of the business.

But all of us, in all branches of the utility industry, I think, can agree on one thing. We are bound to have growth and expansion in spite of occasional periods of temporary slackening in general business. Past experience forecasts that. The mere momentum acquired in the electric, gas, street railway and telephone development of recent years, without any other impelling force, will carry us in the next five or ten years a long way onward.

Take the side of the business I come from—manufactured gas. Within the last dozen years, we have made and distributed more gas than had been made before in all the years combined since Murdock, Winsor, Lebon and the other pioneers originated the gas industry near the beginning of the nineteenth century. This tremendous growth has been registered in the face of practically a transformation in the

The years I mention cover a considerable part of the period in which the business has been switched over from a lighting business to a heating business. The lighting load losses have had to be made up each year—the partial vacuums have had to be filled—before increases could be recorded. Yet the increases have come in ever-growing volume. The vitality and resourcefulness within the industry as reflected in those circumstances are inspiring. The circumstances also suggest that manufactured gas men may have learned some things in their times that would be good for natural gas men to know: a reason for their getting closer together.

Just another citation to the gas business while on that subject, for the good of the souls of you strictly electrical men. Some of you—I can afford to speak plainly, perhaps, since I am also a part-time electrical man—

*Address delivered before the Oklahoma Utilities Association, Tulsa, March 12, 1930.

are apt to be a bit chesty about your branch of the industry. Less than ten years ago, you were hearing from more or less eminent economists that the gas business was on its way to the industrial scrap pile, and that electrical development had a mortgage on the future. Those predictions have long since been discarded and look sillier than ever in the light of another fact.

Gas and electricity, as we know, are simply different forms or sources of energy. The energy distributed as natural and manufactured gas in the United States in 1929 amounted to 28 billion therms. That was the energy equivalent of 835,300,000,000 kilowatt hours of electricity, and that amount of electricity is more than nine times the total United States production of electricity in 1929. So the electrical business is still the "little brother" of these Energy Twins.

Regardless of comparisons, the essentials in facts of this kind emphasize the extraordinary range of what lies ahead of us. The gas business has reached its present proportions mostly as a strictly localized business. But now, due largely to initiative and enterprise in the natural gas field, gas transmission lines hundreds of miles long are in operation, thousand-mile lines are in contemplation, and the imaginative see visions of gas transmission networks eventually extending practically from coast-to-coast and from border to border.

Progress in electrical production, distribution and utilization comes so fast that the observer can hardly keep track of its successive steps. Application of the vacuum tube in long-distance transmission, for example, as recently announced, may profoundly affect interconnection and high-tension transmission beyond anything now thought of.

There is increasing coordination of transportation on steel tracks, on rubber tires, and hard roads, and in the air. In the field of communication the imagination is challenged by what may come from combination and coordina-

tion between the telephone, the radio and the magic of television, now lurking just around the corner.

But we cannot afford to put all of our mental energy into visioning the future. The challenging possibilities of what may be, only emphasize the imperative necessity of dealing adequately with what is, with things as they are, so that we may be able to deal effectively with the new developments when they burst upon us.

This furnishes, it seems to me, ample reason, if there were no other—and there are many others—for the associational work you are doing here, as it is done in other state and regional

Less than ten years ago, you were hearing from more or less eminent economists that the gas business was on its way to the industrial scrap pile, and that electrical development had a mortgage on the future. These predictions have long since been discarded and look sillier than ever in the light of another fact. Gas and electricity, as we know, are simply different forms or sources of energy. The energy distributed as natural and manufactured gas in the United States in 1929 amounted to 28 billion therms. That was the energy equivalent of 835,300,000,000 kilowatt hours of electricity, and that amount of electricity is more than nine times the total United States production of electricity in 1929. So the electrical business is still the "little brother" of these Energy Twins.—B. J. Mullaney.

associations and in the national utility associations. A skeptic, sarcastic or scornful attitude toward association work is sometimes encountered. If there is warrant for that in any degree the fault is ours; it is the fault of us who belong to, and take part in association work.

As for the association idea itself, it seems to me a natural development; it fits in with the way we are organized, as a nation and a people; it is our American way of getting mutual and general interests attended to. We cannot dispense with leadership, but we have in this country no dictatorships, no leadership imposed upon us from above, by heredity or otherwise. Leadership in this country has to win, and prove by performance, its right to lead. This is as true in business and industry as it is in governmental affairs. Associational effort helps both

to develop leadership and to make effective application of it.

Nobody knows all about the business he is in, nor even all about the particular segment or detail of the business in which he specializes. Any one of us can learn much that is of practical benefit to us individually by taking advantage of association opportunities. That alone makes it worth while, to say nothing of what the association does for us in research, in compilation of pertinent information bearing upon our everyday problems, and in facilitating the interchange of practical experience. If the associations are not doing all they can or

should do for our individual or company interests, the smart thing is to jump in and help correct the defects. We don't improve our golf scores by locker-room criticism of the association rules.

One of the drags on efficiency and progress within a given company organization, according to my observation, is the tendency of department heads to think they know all there is to know about their respective jobs, each one's horizon bounded by his own little watertight compartment—no

adequate co-relation of himself and his job to the other departments and functions and the broader interests of the company as a whole. Companies can handicap themselves by analogous isolation from their neighbors in the industry.

Again going to the gas business for an illustration: some one has aptly said that a gas well, a pipe line and some customers do not make a gas business. You can paraphrase that and apply it with equal force to the electricity supply, the street railway or the telephone business. That, apparently, was the way the gas business was often regarded in the early days of "natural" in Pennsylvania, Ohio and Indiana, with consequences that scarcely need to be recalled.

We now know, in gas, that a multitude of factors—the potential market for our product, the sales probabili-

Associational effort helps both to develop leadership and to make effective application of it. *** If the associations are not doing all they can or should do for our individual or company interests, the smart thing is to jump in and help correct the defects. We don't improve our golf scores by locker-room criticism of the association rules.—B. J. Mullaney.

ties and possibilities, the available reserves, the character of demand, the load factor, and so on—have to be coordinated and co-related as directly affecting the financing of a project and the final pricing of the product by which the financing is supported.

There is no ready-made, fixed formula for this. Obviously each project has to be worked out by itself. And the composite results derivable from associational cooperation are helpful to that end. One reason why electricity has appeared to be getting the jump on gas, at times in the distant past, it seems to me, was the more practical and intensive character then of electric association work. That difference does not now exist. Ten years of close contact with American Gas Association work and some acquaintance with other associations are convincing that the A. G. A. is doing its job in degree second to none.

These considerations and implications naturally come to mind when one is in natural gas territory—in a state where, I understand, not one cubic foot of manufactured gas has been produced in years.

Natural gas development and utilization may be a bigger thing than most of us yet realize. As it looms on the horizon now, with immense sources of potential supply, but with those sources of supply far from the potential market, it may even be the biggest thing of all, both industrially and financially, in the immediate public utility future. It has problems peculiar to itself, of course, but they are mostly analogous, at least, to problems elsewhere.

Providing for the demand-peak is an ever-present gas business problem for all of us. In Chicago, our highest 24-hour demand to date is more than double our lowest one-day send-out in the same year and it is 45 per cent above the daily average demand. But

we have a one-hour peak, occurring only a couple of times a year, at a rate of consumption that would be 200 per cent above the daily average if continued for the full 24 hours.

Your peaks are even more acute, I understand. In one of your cities last January, I am told, the peak demand was 12 to 15 times the normal demand during eight months of the year or a peak approximated for only 18 or 20 hours of the 8,760 hours in the year. This provision for protecting the peaks lest disaster to the community follow a failure in service—I wonder how many smart-aleck political and journalistic critics of the business have any conception of it.

In manufactured gas, our new capital needs are mostly for business expansion. Yours have to include provision for reserves to protect existing service, as the sources of supply now drawn upon are depleted. The investment in these reserves has to yield a return. This necessity doubtless accentuates the financing and rate-making problems. It would seem to point to the inevitability of mergers and more mergers in natural gas, not only to facilitate financing but to assure reserve protection to the local or smaller systems. There is an analogy here to the usefulness of inter-connection in the electrical business.

By the same token, this need of reserve protection for the existing service would seem to be a discourager of municipal natural gas enterprises, which necessarily have to be local. Experience has shown, I understand, that the failures in gas service occur where the reliance is upon local supply.

All of which emphasizes the dictum that a gas well, a pipe line, and some customers, don't make a gas business. The operator who has not caught all the implications of

that—who scorns association membership and plays a lone hand—is like the citizen who never looks at a newspaper. He doesn't know what is going on around him and is apt to hear of some things too late for his own good.

An encouraging sign of the present, in all branches of public utility business, is the associational emphasis now put upon sales promotion. We have all become more sales conscious than we were eight or ten years ago, and we are all helping to educate one another in ways and means of increasing sales. The helpful effect of this is reflected in our increasing output. There are also indirect gains of no small significance, especially in our relations with customers and the public.

One such gain may be the recognition among ourselves that ours is not a monopoly business. Public utilities generally have suffered much from acceptance of the "monopoly" label. We must get this "complex" out of ourselves before we can erase it from the public consciousness.

In the academic discussion of abstract economics "regulated monopoly" is a sound term, of course. But within the meaning of "monopoly" to the man in the street, electricity, gas, or street railway business is no more of a monopoly than bottling and selling rain water would be. Nobody has to have what we sell. They want it and buy it only when it serves their needs better than something else would. When we learn that completely for ourselves, and extend realization of it to the public, some of our difficulties will be lessened.

The popular interpretation of "monopoly" no doubt colors, for example, public attitude toward mergers and holding companies, with consequences of far-reaching import. We are all

Natural gas development and utilization may be a bigger thing than most of us yet realize. As it looms on the horizon now, with immense sources of potential supply, but with those sources of supply far from the potential market, it may even be the biggest thing of all, both industrially and financially, in the immediate public utility future. It has problems peculiar to itself, of course, but they are mostly analogous, at least, to problems elsewhere.—B. J. Mullaney.

affected in our mental reactions by catch words and phrases. The popular conception of what "monopoly" means naturally tends to prejudice attitude toward a merger as implying an extension and tightening of monopolistic "oppression."

This ties in with the concern in some quarters for the possible effect of large-scale operations, mergers and holding companies upon regulation. If there is a problem in this—and the existence of any real problem may be doubted—it can scarcely be solved by geographic changes in regulatory jurisdiction—by transferring jurisdiction from state to federal authorities.

Whenever large-scale operation and merger will increase efficiency and better service, it is bound to come as an economic certainty. Resistance to its coming, arising from misunderstanding, can be lessened by having the logic of it better understood.

It has been well said that business is the oldest of the arts and the newest of the professions. This is more than a well-turned phrase when applied to public utility business, in which management constantly takes on more and more the characteristics of a distinct profession. The trend is reflected in the establishment of a course in public utility management at your own state university, as similar courses have been established in other institutions of higher education. Thus professional pride in one's calling becomes an incentive quite as strong, perhaps, as the economic or financial reward incentive.

It may not be unreasonable to expect this development-trend toward professionalized management to have some effect upon regulation. It cannot be expected to—and should not—lead regulatory bodies to relax in their sense of responsibility or vigilance. But it may tend toward bringing together regulators and the regulated on a somewhat better plane.

Before concluding these rambling remarks, let me draw your attention briefly to certain circumstances in relation to which, I think, we have been

entirely too pussy-footed. I mean the Federal Trade Commission inquiry at Washington, which has been going on about two years. I shall not touch the complex and often boring details of the proceedings there, except to say: Any fair-minded and analytical examiner of those proceedings will see that something more than 99 per cent of the so-called "disclosures" of "power trust" iniquity, as fed out to the public, have been misrepresentations and frequently falsehoods. But I would give a few words to one particular detail.

The Federal Trade Commission inquiry has demonstrated the existence of an organized, definite and consciously directed propaganda effort to promote the "socialization"—the government ownership and operation—of certain basic industries, including ours. This program is shrewdly conceived and skillfully promoted. Its existence, "socialization" program, which many of us have been disposed to treat lightly, becomes of graver import when we look at it in connection with another circumstance.

In the Senatorial resolution ordering the current inquiry, the Federal Trade Commission was directed to inquire into what had been done by public utilities to affect public opinion on government ownership. As the Federal Trade Commission interprets that part of the senatorial enabling resolution to which I have referred—and you will find this interpretation more than once in the official record of the inquiry—whatever we do, directly or indirectly, to cultivate good will for our business, is *in effect* "propaganda against government ownership."

In other words, when we advertise our service and its efficiency, when we announce an addition to production and distribution facilities for bettering the service, when we open a new office or stay open after hours for the convenience of customers, and so on—even when we announce a reduction in rates—we are *in effect*, as interpreted by the Federal Trade Commission, en-

gaging in "propaganda against government ownership." I am not exaggerating.

Now what are the obvious implications of that reasoning and that interpretation? If directly or indirectly expressed opposition to, or non-acceptance of, the government ownership idea is a meet subject for governmental investigation, doesn't it follow that the government ownership idea has somehow come to be deemed a fundamentally sacred principle? If not, why should anybody's opposition to it, or non-acceptance of it, be investigated? For the ordering of an official investigation is, of itself, an indictment that something inimical to the public interest has been done.

This would seem to be something for us and all other business people to think about. It applies to other businesses as well as to utilities. It applies to railroads, banking, insurance, steel, coal and oil. If the reasoning I have indicated be permitted to go unquestioned, we may be farther than we realize on the road to "socialization"—government ownership and operation—of industry.

I am not seeing ghosts; only reminding you that an ounce of prevention is still worth a pound of cure and that neglected disorders *can* become chronic. As late as mid-July in 1914, nobody expected a World War. A lot of us didn't believe a constitutional amendment for prohibition would ever come. But it did.

Oklahoma Utilities Association

At the twelfth annual convention of the Oklahoma Utilities Association held in Tulsa, Okla., March 11, 12 and 13, the following officers were elected to serve for the ensuing year: president, T. H. Steffens, Sand Springs Railway Co., Sand Springs; first vice-president, S. I. McElhoes, Southwestern Light and Power Co., Oklahoma City; second vice-president, R. J. Benzell, Southwestern Bell Telephone Company, Oklahoma City. The following officers were reelected: W. R. Emerson, Oklahoma Gas and Electric Company, Oklahoma City and E. F. McKay, manager, Oklahoma City.



The Economics of Load Building*



Colonel Fogg

THERE is very little that I can present under the title "The Economics of Load Building" that has not already been considered or discussed. It has been variously treated and made the subject of a number of papers and addresses, a recent one of particular interest being that of Mr. Samuel Insull, Jr., before the American Gas Association last October.

My interpretation of the "Economics of Load Building" is simply the profitable expansion of our business along sound economic lines, and I think it is obvious that anything even remotely approaching a comprehensive treatment of so broad a subject is beyond the scope of any one man, any one meeting, or any one convention, not to speak of your endurance, nor my intelligence. The developments of the last several years indicate that the gas industry, if not entirely, is very generally alert to the importance of the selling effort, and the need for trained and efficient salesmanship, and sales leadership of the highest order. Similarly the industry now seems to be cognizant of the competitive conditions that confront us in practically

* Address delivered before 1930 Annual Convention of the New England Gas Association.

**Spend Most to Get Most Valuable Business—
Give Each Class Best Promotional Rate—Pay
Salesmen According to Their Worth.**

By OSCAR H. FOGG

Vice-President of The Consolidated Gas
Company of New York

every one of the avenues open to the extension of gas service.

The American Gas Association has done a great service in emphasizing the importance of these essentials, and promoting their acceptance by the industry through the presentation of facts derived from nation-wide surveys of our sales methods and market conditions. Your own New England Gas Association has also been of substantial aid in crystallizing thought and stimulating action along similar lines.

But there are some other phases of the question which appear to have been less thoroughly considered, and which, because they are somewhat fundamental in character, invite analysis and discussion.

Although we agree upon the vital importance of the selling effort, the feeling persists that salesmanship in the gas industry is still under-developed. Those who feel called upon to explain, and perhaps justify, this feeling do so on the ground of the apparent lack of executive interest in our promotional work. Certainly there was a time when that interest was conspicuous by its absence, and there are many who feel that it has not even yet been adequately demonstrated. But I think that, in the main, there is evidence of a significant change in this respect, one indication of which was the alacrity with which a large and representative group of gas company executives accepted service on one of the important committees of the Commercial Section of the American Gas Association, when an invitation was extended to them a month or so ago to serve in an advisory capacity in the preparation of a study course on sales managerial practices. Twenty executives were invited. Not one declined!

But we need more than executive interest; it must be coupled with the most practical kind of executive leadership and support. In this age, no business can endure if its commercial development and growth is not made a major executive function. That should not be interpreted as a demand that the sales executive shall be the boss. It is rather the expression of a conviction that the boss today who does not appreciate the importance of the modern promotional activity and provide brains, ability and dollars to conduct that work intelligently and aggressively, would do well to step aside and let someone take his place who has a proper appreciation of our industry's vital needs.

If there exists any reluctance to admit this necessity—it will perhaps be lessened by a thoughtful consideration of the figures published by the *Gas Age-Record* of January 25, 1930, where the average investment per dollar of gross revenue—for the gas industry—is said to have advanced steadily from \$5.14 in 1926 to \$5.90 in 1929. To ignore such trends as that is merely to postpone a grievous reckoning.

Among other criticisms is that our promotional work is sometimes of a rather hap-hazard nature, and that a closer observance of underlying economic principles is necessary. There is certainly some justification for that view, and, to me at least, it suggests the importance of focussing attention on several elements which will undoubtedly exert a great influence on our future growth.

If we needed any reminder of the present day trends of our load curve, we would find it in the relation of investment to gross revenue, which I have already referred to. That in itself emphasizes the importance of

greater selectivity in our load building, and of giving proper weight to the economic value of potential business.

It seems reasonably certain that in the highly competitive fuel market of today, there will have to be not only revision of some of our rate forms, to enable us to extend our service in competition with other fuels, but more liberal expenditures for promotional work. The allocation of such expenditures, however, should be determined by sound business judgment in the light of the facts derived from a detailed study of the potential fuel market.

By surveying, analyzing and classifying this market, we can determine with reasonable accuracy the relative value of each of the various groups of uses which, taken together, represent the field of our possible growth. The factors that must be studied are: the condition of fuel usage; the burden imposed upon our manufacturing and distribution facilities; the extent to which each separate class of business can be taken on without adding to the existing investment, or the amount of added investment necessary to properly care for such business; the characteristics of the fuel demand and its influence upon the economy of manufacturing and distribution operations.

With such factors understood, the relative value of each class of business will be fairly definite. My use of the term "value" in this connection is intended to mean true economic value as ultimately translated into terms of net revenue. A study of this kind will show that the various classes of potential business have different values when viewed from this practical light, or, as we might say, they will take rank in attractiveness or desirability in the order in which they contribute to the net earnings. This, in the end, is the objective of business operations generally. Why not allocate expenditures for promotional work on the basis of relative value to the company of each class of prospective business. This does not mean promoting the use of gas service to a few particular groups of business to the practical exclusion of all others. Neither does it mean resting on our oars when a considerable portion of any particular

class of the potential market has been adequately covered by gas service.

In our attempt to attract more desirable business, we have, I believe, made much greater progress in the development of scientific rate structures than in scientific sales promotion. In the development of promotional rate forms, we extend to the purchaser certain price advantages because our study of his fuel requirements and character of use indicate that we are able to supply his needs under conditions which are advantageous to us—conditions which make for the more balanced and efficient operation of our plant and service facilities.

The gas industry generally agrees that this is a sound position, therefore the same consideration should determine to a much greater extent than they do, the direction and intensity of our promotional efforts; in short, the division and allocation of promotional expenditures should be governed by the same economic principles that underlie modern and scientific forms of rate structure. I am not alone in the opinion that if the same amount of time and attention had been given to this question as has been given to the subject of rate structures—not only would some of the problems of the latter have been greatly simplified, but our general economic position would be much stronger than it is.

Let us carry that same line of reasoning a step further and apply it to the question of salesmen's compensation. As I have said on other occasions, the whole purpose underlying our sales activity is to expand the use of gas service. But mere growth in volume sold is not enough. The growth must be orderly, logical and in accord with the most efficient production and distribution operation. The sales value of load building should also be regarded in the light of its economic value. The effect of the sales representative's work on the company's earnings should be directly reflected in his compensation.

Under given conditions of rate structure, population, and nature of territory served, some classes of utilization will yield better earnings than others. Often that class which we used to speak of as the backbone of our business—the domestic or household use—produces unsatisfactory re-

turns, and the reason for this has been extensively discussed and is well known to us all. These non-compensatory customers, depending to an increasing degree upon the service stations of life—the bakeries, laundries, delicatessens and restaurants—and finding relaxation and entertainment more and more away from home, present an interesting and a serious problem. A large number of these casual and convenience customers are served at actual loss. We cannot simply mark them off the books and limit our service to those whom it is profitable to serve. Unless we are fortunate enough to be able to establish a rate form that compensates us for these limited conditions of use, we have but one logical alternative—and that is to make these non-compensatory customers profitable by stimulating their demand for our service through the use of modern and properly balanced load building appliances. As many of the customers are the modern "cliff dwellers" the sale of appliances for furthering their use of gas service is very limited. Several companies have made remarkable strides with the refrigerator. This added load requiring practically no increase in production or distribution facilities, is of the most desirable character, often entirely reversing the status of what had been an unprofitable customer, and in the aggregate, producing added revenue with little or no addition to the investment.

I have taken this simply as a concrete illustration of load building in its economic relation to the company's earnings. Certainly the sales representative who is successful in building up the load of non-compensatory customers and carrying them over the line into the class of those who contribute their reasonable share of the net earnings is entitled to compensation that recognizes the economics of the case.

Similarly, added industrial business, of relatively uniform volume throughout the year, is far more valuable than the same volume consumed in a more limited period, because it contributes in greater degree to the company's earnings. Should not the compensation system give due consideration to these economic facts? In my opinion, unless it does so, it cannot be considered as sound, either from the stand-

point of the company's interest or that of the employee.

Another value to be placed upon sales effort is the enduring character of the sale made. By more detailed study and intelligent effort the sales representative can frequently suggest ways in which the operation will be more economical to the user even though the load to the company is reduced. This fortifies the position of gas service against competitive fuels and will build a lasting load secure against the efforts of competitors to dislodge it. Should the compensation of our sales force be penalized for building such a permanent load instead of a meteoric flash of high intensity which may soon pass?

The increase in gas service on an economic basis can result only through salesmanship. The ability and energy of the sales representatives are to be recognized to the utmost. Outstanding accomplishments should be rewarded and no limit placed on earning capacity of the sales representatives. If our compensation system is sound, the higher their earnings the happier everyone will be—including the stockholders.

Here, in at least three of the essentials of building the load on an economic basis, that is, (a) in the expenditure of money to secure business; (b) in the development of rate forms designed to secure business under the competitive conditions that now prevail, and (c) in the development of sounder systems of salesmen's compensation;—it would appear that readjustment could be made in each to approach more closely the requirement that is of the greatest practical importance, and that is, "what is it worth to us?" In few words, spend most to get the most valuable business; give to each class of business (or use) the best rate its value can earn; and pay sales representatives according to the value of the business they secure.

In those companies supplying utility services other than gas service, such as electricity, water or transportation, the gas department should stand on its own feet and supply its own funds to increase or better its load conditions. To be the poor relation is not only uneconomic but unsatisfactory, even though through the help of our

richer relatives we are enabled to bring about the increases which are so eagerly sought.

We will be aided in this respect by the formulation and general adoption of sound accounting methods and policies as they relate to our entire merchandising and promotional activities. Just how clearly the line can be drawn between the two is difficult to say, but the Joint Committee on Merchandise Accounting of the American Gas Association, has recognized the need of adequate accounting records of merchandising operations as apart from other new business activities, and is actively engaged upon the preparation of a classification of accounts and of standard forms of report, which will make available the correct measurement of the results of these operations. At the same time, the committee realizes the close relationship—as inseparable in fact as the two blades of the shears—of merchandising operations with other promotional activities which may not directly involve the sale of appliances, and I am told that it hopes to submit these report forms of appliance sales in such manner that the merchandising results can be combined with other new business expenses to show the net result of the entire promotional activities.

I understand also that the committee is giving attention to the evaluation of the load building results of merchandising, through a study undertaken under the chairmanship of one of your New England men—Mr. Davis M. DeBard, of Stone & Webster.

In this connection we find another interesting point of view—in this editorial from the *Electrical World* of April 6, 1929:

"Capital for Load Building"

"In the annual report of the Southern California Edison Company, John B. Miller states that in the next five years the largest proportion of annual capital expenditures will be allocated to building new business. This program, formed to get larger revenues, reduced rates and greater net profits, marks a new cycle in the evolution of the company. Unit installations to system capacity can be made readily under a definite schedule, and executive attention now is focussed on load building.

"Domestic consumption has increased more than 33 per cent per customer on this property since 1924, but the officials are not content with this growth, and with the remarkable commercial activities back of it.

They are going to allocate money to load building. They are going to make an investment to get new business instead of putting all capital into physical property. This is a conception of utility commercial activity far beyond that held under usual conditions. It is a conception needed in the industry.

"Load building in its pioneer stages requires a cost, a degree of attention and a quality of personnel that seldom are low enough to permit of immediate dividends. Pioneer work with refrigerators, ranges, water heaters, oil burners, electric industrial heating and other loads is a costly business, and far-sighted executives realize this. An investment in ways and means to get this new business in volume is just as legitimate as an investment in a big power station that will be loaded only after some months or years of operation. The point of view is the thing.

"Many contributions have already come to the utility industry from California, notably customer ownership; but in the years to come the policy announced by Mr. Miller of spending money to get new business may be counted on to bring a new point of view into utility management—a point of view that will make for larger revenues, reduced rates and greater profits."

Do not understand me to advocate that policy—I merely present it as a new point of view—refreshing in its novelty.

Two years ago I had the honor of presenting to this gathering some observations on the subject of merchandising and trade cooperation under the title "Sales Allies." I refer to it now only because it may be of interest to you to learn something of the progress that has been made in a situation where some of the principles referred to at that time have been put into operation.

Not quite two years ago we undertook in New York to develop cooperative merchandising, proceeding in a modest way—not at all sure of our ground—but convinced that the best initial course was one of moderation and careful development.

As of December 31, 1929, we had gas appliances on display in the windows and shops of 105 plumbers, steamfitters, heating and piping contractors and dealers in the territory served by our group of companies. Only outstanding representatives of these businesses were selected, but practically all of our better plumbers, steamfitters, etc., are cooperating in the merchandising of gas appliances.

The contacts formed by reason of the many transactions involved during

(Continued on page 170)

A. G. A. Supporting Harry C. Abell for U. S. Chamber of Commerce



Mr. Abell

THE American Gas Association is sponsoring the nomination of its former president, Harry C. Abell, of New Orleans, La., as a director of the Chamber of Commerce of the United States, to represent the Natural Resources Production Department. In addition to the enthusiastic approval of B. J. Mullaney, president of the American Gas Association, Mr. Abell's candidacy has the endorsements of M. S. Sloan, president of the National Electric Light Association; Paul Shoup, president of the American Electric Railway Association; William J. Welsh, president of the Empire State Gas & Electric Association; and George E. Cullinan, chairman, executive committee of the National Electrical Wholesalers Association.

Mr. Abell is pronounced by his supporters as a man eminently fitted for a place on the board of the National Chamber from the standpoint of not only many important business affiliations, but also because of his achievements in the national public utilities organizations. He has served as a National Councillor in the Chamber. His business connections are many, including: vice-president, Electric Bond &

Share Company; vice-president and director, Electric Power & Light Company; president, National Power & Light Company; vice-president, New Orleans Public Service, Inc.; chairman of the boards of the Memphis Power & Light Company, Memphis Street Railway Company, and West Tennessee Power & Light Company, and a director in other companies.

Mr. Abell has been an active leader in association work and his activities have been characterized by outstanding achievements. Among the many important positions he has occupied in the National Electric Light Association are the following offices: treasurer, member of the Constitution and By-Laws Committee, member of the Electrical Resources of the Nation Committee, member of the Finance Committee, member-at-large of the National Executive Committee, chairman of the Information Bureaus Organization Committee, and vice-chairman of the Public Relations National Section.

In the affairs of the American Gas Association, Mr. Abell has long been one of its conspicuous leaders, and his contributions have been strong factors toward the advancement of the gas industry. He has served as a director of this association continuously since 1923, and as chairman and member of many of its important committees. In 1924 he was elected president and his administration was so successful that he was unanimously reelected in 1925. Mr. Abell now is serving as chairman of the Committee on Coordination of Scientific and Marketing Research, which has the correlation of all research conducted by the American Gas Association involving a yearly cost of about \$200,000.

Among other organization affiliations Mr. Abell is a member of the American Society of Mechanical Engineers, American Institute of Elec-



trical Engineers, Engineering Institute of Canada, Engineers Club of New York and the Bankers Club of New York.

The election of directors in the Chamber of Commerce of the United States is highly competitive. In order to insure Mr. Abell's election it will be necessary to secure the support of many National Councillors representing organization memberships in the Chamber. All public utility executives are being urged to secure the commitments of the National Councillors of trade associations and local chambers of commerce, with which they have connection, to support Mr. Abell's candidacy. The National Councillors are being requested to vote for Mr. Abell as Director, Department Natural Resources Production, at the annual meeting of the Chamber of Commerce of the United States, to be held in Washington, D. C., beginning April 29.

Headquarters of the American Gas Association, 420 Lexington Avenue, New York City, would like to be advised of any support secured in behalf of Mr. Abell's candidacy.

Two Receive McCarter Bars— Medals for Nineteen



Patrick
Ware



Lawrence
Everston



John York



Joseph J.
Somers



Harry
Bennett



Elizabeth J.
Fleming



M. G. Wuerstlin



J. J. Dillon



F. J. Ullman



W. Schneider



L. W. Rech



Thos. Coleman



Wm. Kelly



Harry Polger



R. F. Smith

MORE than 550 persons attended the annual dinner of the Quarter-Century Club of The Consolidated Gas Company of New York, and affiliated gas and electric companies, at the Roosevelt Hotel on Wednesday, February 19. Sixty-seven men and three women, who during 1929 completed twenty-five years of service with the company, were received into the organization.

Medals and special awards were given to forty-five other employees, including one woman, who during the past year have performed acts of conspicuous bravery and have saved human life, or who have made contributions effecting safety, economy, and better operation.

George B. Cortelyou, president of the company, presided. More than thirty other prominent officials of the utility companies were present, including W. R. Addicks, senior vice-president, who presented the company's Meritorious Service Medals; Oscar H. Fogg, vice-president, who awarded the McCarter Medals for life-saving; and John Stilwell, vice-president, who presented the Quarter Century Club emblems to the new members.

This is the largest delegation ever to be received into the club at one time, making the total membership 795. There are only nine women in the club, and this is the first instance of three women becoming eligible at one time.

Among those admitted to the club were Oscar H. Fogg, vice-president; John R. Fenniman, treasurer; George Lange, assistant secretary, and James F. Hunter, engineer of construction.

Jacob Schmitt, of the New York and

Queens Gas Company, received the silver Meritorious Service Medal of the company for having saved the life of a fellow-employee. Schmitt's citation stated that: "At considerable hazard, and while off duty, he saved the life of a night foreman who was overcome with gas. He carried the foreman down a ladder, resuscitated him after applying artificial respiration for forty-five minutes, sent the man home, and then completed the tour of duty." This is the second time in the history of the Consolidated and its affiliated companies that a silver Meritorious Service Medal has been awarded.

Eighteen bronze Meritorious Service Medals were presented at the annual dinner. Two of these awards were for contributions to design, construction, and maintenance, and the others were for bravery and life-saving.

Earl L. Griffith, of The Consolidated Gas Company, received the bronze medal for the design and development of a special machine tool for cutting out a section of a steel main under pressure without interruption of plant operation and with safety to the operator.

F. L. Mueller, of The Consolidated Gas Company, received the medal for the design and development of two special machine tools for cutting circular openings in flat plating under pressure. Through the use of these inventions of Mueller and Griffith, certain jobs which have heretofore proved dangerous to workmen and costly through interfering with plant operation can now be done safely, expeditiously, and with considerable saving in cost.

Fred C. Mackee, a collector for The Standard Gas Light Company, was awarded the bronze Meritorious Service Medal for showing unusual bravery in repelling three thugs who attempted to rob him of his collections. The robbers were armed, but Mackee shouted for help, drew his own gun, and shot one of them. He was able to arrest one man, who confessed and made admissions that later led to the arrest of the man who was wounded.

Two employees of the gas company received the McCarter Bar, and nineteen received the McCarter Medal of the American Gas Association for the saving of life from a suffocation by application of the prone pressure method of resuscitation. The Bar is given to those having received the Medal on previous occasions.

When Miss Elizabeth J. Fleming, of the Consolidated Gas Company, was awarded the McCarter Medal on Wednesday night, she was the first woman in the company, and the third in the country, to receive this Medal.

Following were the awards made:

Silver Meritorious Service Medal

Jacob Schmitt of the New York and Queens Gas Company.

Bronze Meritorious Service Medals

Miss Elizabeth J. Fleming, Earl L. Griffith, Thomas S. Hallinan, William Kelley, Patrick Lough, Harry Meyer, Frederick L. Mueller, Henry F. Paff, Harry Polger, Ludwig F. Rech, Nicholas V. Rondi, Roland F. Smith, Martin G. Wuerstlin, and John A. York, of the Consolidated Gas Company of New York; Jacob Benjamin and Frederick C. Mackee, of the Standard Gas Light Company; George N. Cassell, of the Bronx Gas & Electric Company; and Charles Lindemann, New York & Queens Gas Company.

McCarter Bar

John Joseph Hoey and Angelo Passero, of the Consolidated Gas Company of New York.

McCarter Medals

Miss Elizabeth J. Fleming, Harry Bennett, Thomas N. Coleman, John J. Dillon, Lawrence Everston, William Kelley, Harry Polger, Ludwig F. Rech, Nicholas Rondi, Edward Schneider, Roland F. Smith, Joseph J. Somers, Frederick R. Ullman, Martin G. Wuerstlin, and John York, of the Consolidated Gas Company of New York; Louis Bollen, of Central Union Gas Company; George C. Lehman, of the East River Gas Company; Robert Ruf-

York received Quarter Century Club emblems:

David Barry, George V. Barry, Miss Carolyn M. Bedient, Albert Beaupre, Thomas J. Byrne, Philip Canning, Harold Carpenter, Richard W. Cavanaugh, Charles J. Cavanaugh, Miss Annie Conlon, Daniel F. Creedon, Edward Crofton, Thomas Crowley, Albert E. Cursons, Edward Doherty, James J. Feighery, John R. Fenniman, Oscar H. Fogg, Nicola Fologario, Charles J. Gefvert, John Gerdes, John Gerzewski, John Golly, Antonio J. Graziano, Henry T. Holland, James F. Hunter, Christopher Knorr, James Kavanagh, John Kelly, John Kremenbein, George Lange, Henry Lawler, Arthur J. Lyons, George B. Mantel, Michael Matkovich, Anthony McClusky, John F. McCarthy, John W. McQuarrie, Martin O. Munch, Domenico Orlandi, William T. Reilly, William F. Rogers, William R. Schoenfish, Edward Sitterly, James Snyder, Wesley Souder, Frank J. Spitz, I. M. Stettenheim, Lucas C. Strub, Ernst F. Swenson, James H. Warrington.

The following employees of the Central Union Gas Company received Club emblems:

Arthur Broders, Mrs. Kate Brophy, Harry Ma-



A. Passero

loney, Edward Moore, Frank Morodan.

The following employees of the New Amsterdam Gas Company received Club emblems:

James E. Condron, Fred Heiselmann, Sr., Thomas J. Pritchard, John Rabbitt.

The following employees of the Standard Gas Light Company of the City of New York received emblems:

James J. Daley, Joseph B. Dwyer, John Frohlich.

Ignazio Dicomino, Anthony Gardotski, Gustave Koehler, and John Mimchek, of The Astoria Light, Heat and Power Company; Harry W. Flynn



J. J. Hoey



McCarter Bar Winners

fini, of the Astoria Light, Heat and Power Company; and Patrick Ware, of the Northern Union Gas Company.

McCarter Certificates

Thomas Hallinan, John Hein, Harry Meyer, and Henry Paff, of the Consolidated Gas Company of New York; and William Heiselman, of the East River Gas Company of Long Island City.

Recipients of Quarter Century Club Emblems

The following employees of The Consolidated Gas Company of New

Other McCarter Award Winners



Geo. C. Lehman



Robert Ruffini



N. V. Rondi



Louis Bolen



Wm. Heiselman

and James Hunt, of the National Coke and Coal Company; and Michael Reinhardt, of The Northern Union Gas Company, also received Club emblems.

Medal awards were accompanied by a personal greeting from the officer making the presentation. As each man went forward to receive his award his

citation was read and applause followed. With two or three exceptions the recipients were present, and in case of those absent the citation was read.

What Natural Gas is Doing for St. Louis Industries

By GEORGE C. SMITH,

Director, Industrial Bureau, Industrial Club, St. Louis

It is necessary only to glance at the list of large industries in the St. Louis Industrial District which are taking advantage of a hitherto unavailable supply of natural gas to realize the value of natural gas to the industrial prosperity of a metropolitan center.

Several months ago the Mississippi River Fuel Corporation completed a pipe line from the fields of Monroe, La., to St. Louis, making available for industries of this district a large supply of natural gas. The enthusiasm with which executives welcomed this new utility was evidenced in the reception which industrialists of this city tendered to officials of the Mississippi River Fuel Corporation upon completion of the gas line.

Twenty-four large concerns in the St. Louis district are now making use of the natural gas, and others are reported to be making plans for its utilization. Those which are already taking advantage of this fuel are:

Owens-Illinois Glass Company, Granite City Steel Company, National Enameling and Stamping Company, Scullin Steel Company, Union Starch and Refining Company, Pittsburgh Plate Glass Company, St. Louis Screw and Bolt Company, St. Louis Malle-

able Casting Company, Northwestern Terra Cotta Company, Koken Companies, Western Cartridge Company, Hydraulic Press Brick Company, Aluminum Ore Company, National Lead Company, Lewin Metals Corporation, Laclede-Christy Clay Products Company, Alpha Portland Cement Company, Cahokia Manufacturers Gas Company, Arkansas Power and Light Company, Arkansas Natural Gas Company, Evens and Howard Fire Brick Company, Obear-Nester Glass Company, Laclede Tube Company and Missouri Industrial Gas Company.

The flow capacity of the 22-inch pipe line ranges from 100,000,000 to 115,000,000 cu.ft. of gas per day, although, due to load capacity, St. Louis receives actually between 75,000,000 and 85,000,000 cu.ft. per day.

Value of the natural gas to establish industries is adequately illustrated in the case of one large steel company in the St. Louis district. This concern recently installed a sheet furnace and finds that the cost of its finished product is less, because there are fewer seconds and fewer rejections. This, I believe, may be attributed to the more even temperature, and the fact that the fuel produces no sulphur.

For metallurgical and industrial

uses natural gas is generally admitted to be a better fuel, and in some cases it is cheaper.

The possession of natural gas in St. Louis is certain to stimulate a further searching out of nearby raw materials for the steel, chemical and ceramic industries. Surrounding St. Louis is a district rich in these raw materials, and they have been used in recent years in building up an extensive variety of industries. But the availability of natural gas, so important in these industries, will stimulate a further searching out of the raw materials which supply them.

The Industrial Bureau, during the past year, has been very much interested in developing raw materials. With this end in view, the bureau has cooperated closely with Dr. H. A. Beuhler, the State Geologist, in a development of Missouri's mineral resources. Several months ago the Industrial Club of St. Louis created a scholarship, by which a graduate of the Rolla School of Mines at Rolla, Mo., is enabled to continue his work for a master's degree, and at the same time aid Dr. Beuhler in a more intensive development of the mineral resources of the state.

In our work of bringing new industries to the St. Louis district, the availability of natural gas will be of inestimable value in many instances. In innumerable instances the supply of natural gas will be an integral factor in this presentation.

Fulfillment

By Douglass Burnett

Consolidated Gas Electric Light
& Power Company of Baltimore



Mr. Burnett

COMING a week after the Public Service Commission opinion and order in a rate case, the address of Samuel Insull, Jr., of the Midland United Company, before the American Gas Association Convention last October, was of great interest, because it discussed the functions and methods of interpreting rates to customers. He indicated the fundamental fact that sales promotion is a matter of coordination between the rate expert, the sales manager, and the advertising man, and that it is, therefore, a prime responsibility of the executives, in the fulfillment of which the executive will improve at once the position of the investor and the position of the customer.

The purpose of the present paper is to indicate how one company carried on its program of activities in such a way that there was laid before the eye and mind of each residential customer, an appropriate explanation of what the rate change meant to him and how much he would save. The saving, given in money amounts, was translated in terms of service, and this in turn, constituted a suggestion as to additional service that the customer might desire to utilize.

The rate change ordered was considerably greater in amount than anticipated by the company, and was, therefore, a matter of serious moment, complex in scope, requiring effective presentation to customers. Being effective on all bills rendered, beginning November 15, 1929, it was desirable to translate, within the next two or three months, the reduction made by the company into additional utilization of the service by the customers, so as to stimulate additional use during the

How one company carried on its program of activities in such a way that there was laid before each residential customer an explanation of what the rate change meant to him and how much it would save.

immediately following winter months, and thus avoid the usual recovery period of a year to eighteen months. The rate changes were designed to promote new business, as well as to simplify the form of rates by eliminating causes of friction and misunderstanding.

Advertisements setting forth the reduction were displayed in the newspapers and copies were sent to all customers. New rate schedules filed with the Public Service Commission in accordance with its order, were printed and distributed to the company's employees who are accustomed to utilize rate information.

A fundamental change was made in the method of informing the customers with their bills. In the past it was the custom to attach to the bills, a condensed statement showing the new basis of the rate, prepared as a schedule matter. In this instance, however, we endeavored to individualize and to make a simple, direct story of immediate personal interest to the customer. Thus, through a grouping of customers and utilizing appropriate matter, we were able to limit to one sentence, the particular point with reference to the changed rates which was of most interest, and to couple with it the statement: "With the new low rates you may now enjoy greater use of your present service for the same bill and find economy in the use of additional labor-saving appliances."

In the following month, under the title "The New Low Rates and What They Mean in Your Home" we were able to give, with each residential bill, in a sentence or two, a precise rule, illustrating the amount of the saving on the customer's account, and also a tabulation of the additional cost of certain additional services that were suggested.

Another fundamental point was, that the education of employees, with respect to the rate change was conducted by informing them fully as to

the information that had already been submitted direct to the customers, rather than to depend upon the education of employees to tell the customers about the significance of the new rates. The employees were given all the information necessary to have a complete understanding of the rate schedules and of the nature of the changes in rates, besides information which would enable them to check the data given direct to the customers by the company, to explain the amount of the savings on the customer's bill, and to explain the illustrations of prospective use.

Further information to employees was given by articles prepared by the head of the Billing Department, appearing in the company's house organ, issued to employees, which explained what was being done in the Billing Department in the application of the rates, and which included a number of illustrations showing the old and the new methods of figuring bills under different customer conditions.

The representatives were further required to call upon commercial and house heating customers affected by the rate changes, in order to explain the new opportunities for additional uses at the lowered rates.

All merchandise advertisements are carrying some reference to the new rates and the rate reduction. These advertisements are numerous, according to the various campaigns being conducted and appliances that are on sale. At this writing, a show-window exhibit of certain gas appliances has a centrally located placard referring to the new rates. The advertisement stickers that are attached to the bills each contain some reference to the new rates. These methods will be continued during at least the period of recovery from the rate reduction.

In conducting this work, due note was taken by the members of the General Service Department, or Public Re-

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A Recent Development in Gas Purification

IN the manufacture of coal gas there are several processes of purification through which the gas must be passed before it is finally a finished product ready to be sold to the consumer. Some of these processes result in the recovery of valuable by-products such as tar, ammonia, benzol and others which net back a credit to the manufacture of the coal gas. There are, however, some objectionable materials in the raw coal gas which must be removed before the gas is finally pumped into the city mains. These ordinarily have no value and are a debit to the manufacture of the coal gas. Chief among these objectionable materials are hydrogen sulphide and cyanogen compounds.

Until June, 1928, it was the practice of the Rochester Gas and Electric Corporation to pass the coal gas through the Koppers liquid purification process after it left the acid saturators and then through dry oxide boxes. The gas before entering the liquid purification process contained about 400 grs. of hydrogen sulphide and 48 grains of cyanogen compounds per 100 cu.ft. of coal gas. In the liquid purification process approximately 90 per cent of the hydrogen sulphide and 100 per cent of the cyanogen were removed. The sulphur in the hydrogen sulphide was removed as finely divided sulphur in the thionizers where air is blown through the liquid purification solution to remove the sulphur. The remaining hydrogen sulphide in the coal gas was removed in the dry oxide boxes. The cyanides were removed as fixed sodium salts in solution.

In the removal of the hydrogen sulphide and cyanogen compounds in this liquid purification process the gas is scrubbed by a solution of sodium carbonate with which is mixed an iron ore catalyst called ferrox. When the sodium carbonate is dissolved in water it hydrolyses to some extent with the water to form carbonic acid and sodium hydroxide which gives this solution an alkaline reaction. In the removal of

Former Useless By-Product Promises to Become Valuable in Romance of Science

By A. M. BEEBEE,

General Superintendent, Gas Department,
Rochester Gas and Electric Corporation

the hydrogen sulphide with the sodium carbonate solution, compounds are formed, the major portion of which are actified or revived when air is blown through it in the presence of the ferrox and gives off free sulphur and regenerates the solution for reuse. So in the removal of the hydrogen sulphide no large amounts of sodium carbonate is lost except by leakage in the system and that amount of solution that is entrained in the sulphur slurry. In the case of the cyanogen compounds the result is much different unfortunately. In the absorption of the cyanogen compounds by sodium carbonate, sodium cyanide is formed which in the presence of free sulphur forms sodium sulphocyanide. When air is blown through this solution it will not reactify to form sodium hydroxide. Therefore all of the sodium carbonate used in removing the cyanogen compounds is lost. Since the cost of sodium carbonate is the main expense of the liquid purification process it is evident that the removal of cyanogen is very expensive and if some method could be devised whereby the cyanogen could be easily and cheaply removed before the gas reached the liquid purification process a large economy would result.

It was with the above thoughts in mind that about eighteen months ago we attempted at the suggestion of Dr. Sperr of the Koppers Co. to remove the cyanogen compounds by a new process. This process consisted of scrubbing the coal gas after it left the secondary washer cooler with first a weak ammonia liquor. This liquor reacted with the hydrogen sulphide in

the gas to form ammonium sulphide. Then to this solution there was added some of the finely divided liquid purification sulphur. The ammonium sulphide which was formed by the reaction of the ammonium hydroxide and the hydrogen sulphide had the property of combining with the finely divided sulphur to form ammonium polysulphide. This material reacted with the cyanogen compound in the coal gas to form ammonium thiocyanate. This process removes approximately 98 per cent of the cyanogen compounds, and 5 per cent of the hydrogen sulphide. The ammonium thiocyanate liquor formed can be run through an ammonia still to recover the ammonia. Since the ammonium thiocyanate can be made into a fairly pure 30 per cent solution, it seems as if other markets might be found for it. We are cooperating at the present time with the Koppers Co. in developing a market for this material which has very marked chemical characteristics that are interesting to consider. Ammonium thiocyanate which has the formula NH_4CNS will, when heated to $170^\circ\text{--}180^\circ\text{C.}$ to unite with itself to form thiourea which has a formula $\text{SC}(\text{NH}_2)_2$. This thiourea when mixed with formaldehyde forms condensation products which resemble bakelite in that it can be machined and moulded. It has an advantage over bakelite in that it can be made colorless. It is fireproof and can be used in radio construction, telephones, cutlery, optical work and countless other uses. We have only started to investigate the possibilities of the material. Later developments may show some more interesting facts on additional uses and commercial possibilities.

This is only another of the many examples that we have seen in the last few years of how slightly we have scratched the surface of the possibilities that lie in the materials which we handle every day in the modern gas plant. While at the present time we may be operating for the primary purpose of producing gas there are many reasons to believe that in a few years the tail may wag the dog and the plant will be operated for the production of the by-products as we now are wont to call them and the gas will be the by-product such as is now the case with the coke plants.

The new material described by Mr. Beebe led the *Rochester Times-Union* to publish a popular description of the product. This article, which was written by Vernon Croop, follows:

"An erstwhile unwanted by-product in the production of pure illuminating gas now has been developed through research by the Rochester Gas and Electric Corporation into a hard, resinous substance declared to be superior to bakelite and having an unlimited number of commercial uses.

"The story of this transformation of an 'ugly duckling' material, so useless that to get rid of it was a difficult problem, into what promises to be the 'Cinderella' of gas by-products, was related today by A. M. Beebe, general superintendent of the gas departments of the Rochester Gas and Electric Corporation.

"The new product, which has not as yet been named, is made by adding formaldehyde to thiourea, a product made from heating ammonium thiocyanate.

"Among its qualities Mr. Beebe today pointed out the following:

"It is equal to bakelite in machining and molding qualities and in dielectric strength.

"It is more resistant to acids and alkalis and stronger at higher temperatures than bakelite.

"It is non-inflammable.

"It can be made in any color, or may be made transparent. (Bakelite can only be made in dark colors.)

"It will pass ultra-violet rays.

"Chemists began making the new material early this year and have just finished and thoroughly tested the first samples. Mr. Beebe exhibited two candlesticks made from the material.

"Development possibilities for the material seem tremendous," said Mr. Beebe.

"Because of its fire-proof qualities, we expect it to be widely used for interior trim, window frames and other products which it is desired to use in particular color. One shipping company that has lines in the tropics already is using it to coat ship fittings to prevent corrosion. The material can be used as a substitute for bakelite in radio construction, telephones, industrial fittings, instruments, and many fields, doubtless, where it has not even been considered as yet."

"Urged to sketch the history of the development of this product, Mr. Beebe related events that constitute a romantic chapter in the pages of science.

"Up until two or three years ago," he said, "gas contained an impurity, cyanogen, which had a corrosive effect on meters and pipe lines. This was not then removed. Another impurity, hydrogen sulphide, was removed by the iron oxide purification process.

"To produce a gas free from all impurities, several years ago the company installed the first liquid purification plant in the country. This removed the hydrogen sulphide and also the cyanogen.

"The liquid purification process uses sodium carbonate solution with ferrox, an iron compound. The hydrogen sulphide unites with the sodium carbonate to form a compound which can later be revived (for use again) by an activation process. However, the cyanogen unites with the sodium carbonate to form a solution which is not renewable and thus uses up about \$20,000 worth of sodium carbonate yearly. This expenditure was considered worth while to get rid of the corrosive cyanogen.

"In revivifying the hydrogen sulphide solution for reuse, free sulphur is deposited, a substance which has some market value for use as an insecticide. However, the Rochester Gas & Electric Corporation produces about five tons of sulphur a day and has never been able to find a market for all of it. The excess has to be thrown away and its safe disposal is a real problem since it is the aim of the company to keep all impurities out of the river.

"Also the non-revivifiable solution resulting from the removal of the cyanogen also was difficult to dispose of. This material was sodium thiocyanate.

"Some months ago in discussing this problem with Dr. Frederick W. Sperr, research director of the Koppers Company and Mellon Institute at Pittsburgh, one of the nation's leading chemists, the company learned of a new process for purifying gas. Dr. Sperr revealed that in Germany, where he had recently visited, there was a plant that had taken steps to remove the cyanogen from gas by washing it with ammonia liquor and sulphur (a polysulphide).

"The Rochester Gas & Electric Corporation already had ammonia liquor (a by-product in making gas from coal) and an excess of sulphur from the liquid purification process.

"It was decided to try out the new method and it was found that it resulted in complete removal of the cyanogen. The new process was then placed ahead of the liquid purification and since it removed the cyanogen it meant a saving in sodium carbonate worth \$20,000 a year.

"In removing the cyanogen with ammonia liquor and sulphur a compound called ammonium thiocyanate is formed.

"This material, when concentrated, forms a rock-candy substance. When heated in an autoclave it forms thiourea, the atoms in the compound rearranging themselves under the heat.

"Thiourea with formaldehyde added produces the new resinous product which is similar, but superior to bakelite, Mr. Beebe concluded."

GAS HELPS BUILD U. S. S. CHICAGO

When the U. S. S. Chicago, Uncle Sam's newest cruiser, is launched on April 10, gas will have played a larger part in her construction than in that of any other vessel, according to reports from the Mare Island Navy Yard.

Used in the past to cut up old battleships, gas has been enlisted for constructive purposes in building the Chicago.

The one and one-half million rivets required were all heated in specially designed heaters. The uniform heat, says the report, produces stronger rivets and prevents oxidizing. All the zinc used to galvanize the inner bottom of the cruiser, for machinery foundations and for her fresh water tanks, was melted in gas-fired vats. Gas has also been used to bend all copper pipes installed, and for much of the welding.

It is estimated that the Mare Island yards are now using three million cubic feet of gas a month in various heating processes, and for cooking, water heating and other purposes in the naval hospital and buildings connected with the government establishment.

The U. S. S. Chicago will be a 10,000 ton ship, and will have a speed of more than thirty-two knots an hour.

Affiliated Association Activities

Mid-West Gas Association

THE twenty-fifth anniversary convention program of the Mid-West Gas Association is an auspicious one. The convention will be held at Waterloo, Iowa, April 14, 15 and 16 with headquarters at the Russell-Lamson Hotel.

The program for the first day's session includes an address by B. J. Mullaney, president of the American Gas Association; a paper on "Natural Gas as Applied to Existing Gas Systems" by E. L. Fisher, of the United Light and Power Company; two papers on "Gas House Heating," the first on "Hot Air Furnaces," by W. E. Derwent, of the Geo. D. Roper Corporation, and the second on "Conversion Burners," by R. H. Luscombe, of the United Light & Power Engineering & Construction Company; a paper on "Developments in the Manufacture of Gas by Louis Stein," of the Northern States Power Company; and an address by Floyd Parsons, of New York.

The second day of the convention is to be featured as "Cleanliness Day." N. N. Marshman, assistant director of the Cleanliness Institute, of New York, will deliver an address on "The Cleanliness

Campaign and Its Connection with Load Building." This will be followed with a paper on "Complete Gas Laundries for the Home," by James Trainer, of the W. E. Lamneck Company; a paper on "Developments of Domestic Load Through Automatic Water Heaters," by R. H. Lewis; a paper on "Gas Refrigeration," by A. J. Peters, of The Consolidated Gas Company of New York, and a paper on "Training of Salesmen," by Alfred A. Uhalt, of the General Electric Company.

R. B. Searing, secretary of the association, states that plans are being made to handle an especially large convention due to the celebration of the twenty-fifth anniversary. Efforts are being made to get all of the older members to attend this meeting.

New England Gas Association

ALL attendance records were broken at the annual convention of the New England Gas Association held at the Hotel Statler in Boston, Mass., February 19 and 20.

H. Vittinghoff of Stone & Webster, Inc., Boston, was elected president for the coming year; M. B. Webber of Athol

(Mass.) Gas & Electric Company, first vice-president; I. T. Haddock of Cambridge (Mass.) Gas Light Company, second vice-president; F. D. Cadwallader of Boston Consolidated Gas Co., treasurer, and C. D. Williams was re-elected executive secretary.

New Jersey Gas Association

THE annual convention of the New Jersey Gas Association will be held at the Hotel Monterey, Asbury Park, N. J., on April 25, 1930. All arrangements have been completed for an outstanding meeting.

President R. A. Koehler will open the convention with an address which will be followed by a short business session and then an address by Major Alexander Forward, Managing Director of the American Gas Association.

S. Labert St. Clair, nationally known newspaper and advertising man, will speak on public utility publicity and advertising. W. H. Seely, president of the Osborne Company of Newark, N. J., will deliver an address on merchandising, a subject on which Mr. Seely is considered an outstanding authority. Following Mr. Seely's address, O. F. Potter of Newark, N. J., chairman of the Accounting Section of the association, will present the report of his committee. Mr. Potter will present some new ideas on merchandise accounting and it is expected that an interesting discussion concerning this controversial subject will follow.

The afternoon session will be opened by W. L. Shively of the Koppers Coke Company, Pittsburgh, Pa., who will present a paper on "Oil Fog Lubrication of Gas Mains." Mr. Shively's treatment of this entirely new subject is expected to create much interest among the technical men attending the convention.

The report of the Safety Committee will be given by A. J. Van Brunt of Newark, N. J., chairman, followed by an address on gas equipment from the manufacturers' point of view, by E. S. Dickey. Mr. Dickey is general manager of the Maryland Meter Works of the American Meter Company and vice-chairman of the Manufacturers' Section of the American Gas Association.

H. A. Sutton, of Newark, N. J., chairman of the Association's Industrial and House Heating Section, will submit the report of his committee, discussing the industrial and house heating problems with which the gas companies in New Jersey are confronted. Authorities on this most timely subject from New Jersey and from gas companies outside the State will discuss this report and will present various viewpoints on this broad subject.

The officers of the association are as follows: President, R. A. Koehler, Newark, N. J.; first vice-president, Chester

N. E. G. A. Officers



FRONT ROW—RIGHT TO LEFT: M. B. Webber, Vice-President; H. Vittinghoff, President-elect; John J. Quinn, President; I. T. Haddock, Vice-President-elect, and F. D. Cadwallader, Treasurer

BACK ROW—RIGHT TO LEFT: J. D. Taylor, Chairman, Manufacturing Division; A. S. Hall, Chairman, Operating Division; C. D. Williams, Executive Secretary; W. F. Norton, Director at Large; E. E. Eysenbach, Director at Large, and J. H. Sumner, Chairman, Sales Division

Grey, Atlantic City, N. J.; second vice-president, Louis Stoecker, Newark, N. J.; and secretary, Herbert E. Cliff, Newark, N. J.

Wisconsin Utilities Association

THE promising plans and program for the Gas Section Convention of the Wisconsin Utilities Association, to be held at the Hotel Racine, Racine, Wisconsin, on April 24 and 25, were given in the March issue of the MONTHLY. There is every reason to believe that Chairman H. R. Broker will have the opportunity of greeting a record-breaking attendance.

A mid-year meeting of the Commercial Section Committees of the Wisconsin Utilities Association was held in Milwaukee on February 19. A brief general session starting at 10 o'clock was held after which the several committees met separately. All present assembled for luncheon, following which progress reports were presented. These committees are preparing their reports for the convention of the Section to be held in Green Bay, Wisconsin, on July 31 and August 1.

Pennsylvania Gas Association

ACCORDING to Warren A. Norris, of Lebanon, Pa., president of the Pennsylvania Gas Association, the program for the annual convention to be held at Galen Hall, Wernersville, Pa., April 29, 30 and May 1, is the most elaborate one ever arranged in behalf of this organization. The addresses, papers and discussions cover pertinent problems of the gas industry and will be of interest and assistance to all in attendance.

Some of the outstanding speakers for the meeting will be Frank R. Phillips, vice-president and general manager, The Philadelphia Company, Pittsburgh; Philip H. Gadsden, vice-president, The United Gas Improvement Company, Philadelphia; Alexander Forward, managing director, American Gas Association; Dr. F. B. Short, director of public relations, J. C. Penny Company, and Edward J. Cattell, former statistician of the City of Philadelphia. Important matters to be presented and discussed include the training of order clerks, customers' account course, obtaining of industrial and house-heating new business, merchandising from a public relations standpoint, refrigeration, late developments of gas production, economics of low- and high-pressure distribution, and employee education.

"Entertainment and recreation for those attending the convention have also been arranged," Mr. Norris reports, "and all indications point to this being the finest meeting ever held by the Pennsylvania Gas Association." The afternoon of April 30 has been set aside for those interested in golf, tennis, baseball, etc.

Empire State Gas & Electric Association



M. E. Skinner

THE annual meeting of the Commercial Section of the Empire State Gas and Electric Association was held at Rochester on February 13 and 14. More than two hundred sales managers, engineers and heads of departments attended the two days' session. M. E. Skinner, vice-president of the New York Power & Light Corporation, of Albany, was elected chairman and L. A. Coleman, vice-president of the New York and Queens Electric Light and Power Company, vice-chairman.

The Accounting Section of the Empire association has completed arrangements for its annual meeting at Briarcliff Lodge in Westchester County, Thursday and Friday, April 24 and 25. Morris Tracy of the Empire Gas & Electric Company at Geneva, who is section chairman, announces the following features of the program:

Thursday morning, opening address by Eugene H. Rosenquest, president, Westchester Lighting Company; papers, "Mechanical Operation of Accounts Payable," by C. E. Eble of the Consolidated Gas Company; paper, "Merchandise Accounting," by M. E. Skinner, vice-president, New York Power & Light Corporation, and Ernest Johnston, secretary, Syracuse Lighting Company; "Taxation Records" will be discussed by J. J. Ward of the Associated Gas & Electric System, and "Accident Prevention" by H. H. Judson,

(Continued on page 179)

Convention Calendar

Accounting Section Conference,
Stevens Hotel, Chicago, Ill.
April 3 and 4.

Distribution Conference,
Hotel Statler, St. Louis, Mo.
April 9, 10, and 11.

Mid-West Gas Association,
Waterloo, Iowa
April 14, 15, and 16.

Mid-West Industrial Gas Sales Council,
Palmer House,
Chicago, Ill.
April 18.

New Jersey Gas Association,
Asbury Park, N. J.
April 25.

Wisconsin Utilities Association, Gas Section,
Racine, Wis.
April 24 and 25.

Empire State Gas & Electric Association, Accounting Section,
Briarcliff Lodge, N. Y.
April 24 and 25.

Pennsylvania Gas Association,
Galen Hall, Wernersville, Pa.
April 29, 30, and May 1.

Missouri Association of Public Utilities,
Springfield, Mo.
May 1, 2, and 3.

Western Div., Natural Gas Dept.
A. G. A.
Roosevelt Hotel, New Orleans, La.
May 5, 6, 7, and 8.

Joint Production and Chemical Conference,
Hotel Cleveland, Cleveland, Ohio
May 21, 22, and 23.

Southern Gas Association,
Savannah, Ga.
June 10 to 13.

National Electric Light Association,
San Francisco, Calif.
June 16-20.

Wisconsin Utilities Association, Accounting Section,
Eau Claire, Wis.
June 19-20.

American Electric Railway Association,
San Francisco, Calif.
June 23-26.

Canadian Gas Association,
Halifax, N. S.
June 24 and 25.

Michigan Gas Association,
Grand Hotel, Mackinac Island, Mich.
June 30, July 1, and 2.

Wisconsin Utilities Association, Commercial Section,
Greenbay, Wis.
July 31 and Aug. 1.

Pacific Coast Gas Association,
Hotel Huntington, Pasadena, Calif.
Sept. 9-12.

Empire State Gas & Electric Association,
Saranac Inn, N. Y.
Sept. 18 and 19.

American Gas Association, Municipal Auditorium, Atlantic City, N. J., October 13-17, Alexander Forward, 420 Lexington Avenue, New York, N. Y., Managing Director.

Gas Annealing Furnaces Where the Long Sheets or Strip Aluminum Are Annealed in Coils



Gas Necessary in Conversion of Aluminum into Kitchenware

THE processes of making stamped aluminum kitchen utensils from the rolling of the sheets to the forming of the ware are somewhat similar to those used in the steel mill and press room. Rolling ingots are heated, broken down in the rolls and given a sufficient number of passes to form them into sheets which are then annealed. These sheets are sheared to size and fed into batteries of presses which form and shape the ware. This in general is the practice at the New Kensington, Pa., plant of the Aluminum Company of America.

The raw material consists of 60-pound pigs of pure aluminum. These are remelted and cast into rolling ingots. The melting is accomplished in a battery of brick furnaces approximately 20 ft. wide and 8 ft. deep, the hearths being in the form of shallow tanks of refractory material. Here the metal is melted by the heat from three gas burners located in one end. The firing is done tangentially to the arch which deflects the heat down into the bath. The melting point of aluminum is 1216° F. The molten metal is drawn off continuously into ladles, through two openings in the rear of each furnace, and is then cast into different shapes for various purposes, a

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American Gas Association

100-pound ingot being a typical form in which it is rolled into sheets.

The remelt furnaces are set in one long line and immediately back of them is a parallel space laid out in short cross rows of molds. The molds, which are of cast iron, are of various types and sizes. One type, which is set four in a row, is hinged to a rod and is tilted to assist in pouring, while a spray of water cools it. As aluminum shrinks $6\frac{1}{2}$ per cent while solidifying more hot metal must be poured into the mold to make up for this shrinkage. At the end of each row is a small iron pot set in a brick foundation and heated with one gas burner. In this, aluminum is kept molten to be used in heading up the molds.

A gravity roller conveyor runs along the further side of the "molding floor" and as the slabs are removed from the molds they are placed on this conveyor and taken to a central point where they meet an elevator conveyor which carries them to the rolls in another division. The ingots are rolled hot. The temperature of the ingot is regulated by an operator located at the junction of the two conveyors. Here is a small

storage space formed by several short roller conveyors side by side where the slabs are held until they have cooled to approximately 800-900° F. when they are pushed onto the conveyor to the rolls.

However, much of the production from the molding division is piled and cooled against later rolling schedules and these must be preheated. For this purpose preheating furnaces are conveniently located between the molding and rolling divisions. These are continuous and automatic in operation. Built of brick and steel encased they are 70 ft. long, 8 ft. high, 7 ft. wide and are provided with a conveyor.

The conveyor is motor operated through a speed reduction train and its speed can be regulated so that the slabs remain in the furnace the correct length of time for thorough soaking at the correct heat. Temperature control is aided by the employment of two recording pyrometers which record the heat in six sections of the furnace. Each of these furnaces is heated with 16 gas burners, divided between the two long sides and firing below the racks.

The hot rolling ingots are unloaded at the discharge end of the furnace and moved directly over to the roll



Rolling mill in which aluminum ingots are reduced to sheets

train which is close by. As the conveyor is in the form of a loop the empty racks return and are reloaded for the next cycle.

The rolls are similar to those in the steel mills and the rolling ingots are passed back and forth until of the correct gauge. This is all done on the first heat. The cold rolling division consists of other trains of rolls. Some of the rolls are highly polished to give the sheets a mirror-like finish, while other rolls are treated variously to provide different finishes. Other roll trains are used to roll strip aluminum.

Annealing is done to reduce the hardening set up in the rolling. Annealing furnaces are arranged in one long row and the largest are about 18 ft. long, 8 ft. wide and 7 ft. high. They are of the periodic car-bottom type and of brick construction with steel cases. A car, just the size of the horizontal cross section of the furnace, is loaded with aluminum sheets or rolls of strip and then run into the furnace on rails provided for this purpose. The furnaces are heated by 9 gas burners located on each side and below the car top, and a temperature range of from 650 to 750° F. is used. Some of these furnaces are double and others single, the latter being smaller and requiring a less number of burners.

The first batteries of machines in the

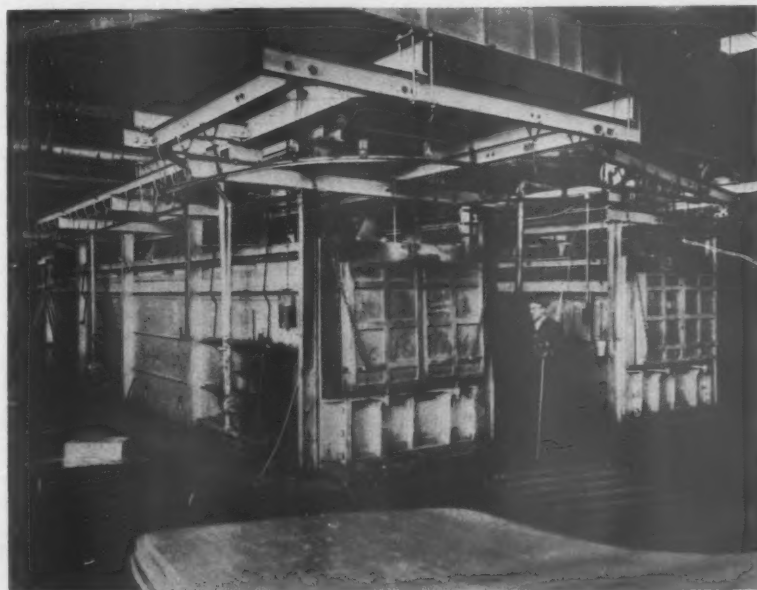
cooking utensil division consist of shears, trimmers, slitters, etc., for preparing the metal for the press. For large ware square sheets are pivoted on a machine and revolved in cutters which cut them to circle.

The press division presents the picture of a vast space filled completely with power-driven presses with a traveling belt conveyor, weaving in and

out, and on which the utensils travel between processes and finally to the packing room. Shallow pans about three feet in diameter are fixed to the belt of the conveyor, in one long string and the ware is placed in these.

Different products are made up in various departments and frequently each department will have a short auxiliary conveyor, but all feed onto the main conveyor eventually. For instance, stew pans are formed in three different presses. The first press is fed from a roll of strip aluminum and here the material is blanked and receives the first draw. This is removed and placed on end in an incline where it rolls by gravity to the next press to receive the second draw. Another incline takes it to the third press for the final draw when it is placed onto the main conveyor to pass successively through other operations including polishing and riveting on a handle.

Other utensils are spun on spinning machines, the edges turned on other machines, handles welded on with spot welders and in fact a multiplicity of varied operations are carried on along the travel of this main conveyor. Whole sections of polishing and buffing jacks are placed where most convenient for finishing and the conveyor finally winds up in the packing and shipping division.



Gas furnaces for reheating aluminum slabs for the hot mills which roll them into sheets

Use of 7% Carbon Dioxide and 93% Oxygen in Treatment of Carbon Monoxide Poisoning

By CECIL K. DRINKER, M.D., and THOMAS J. SHAUGHNESSY*

THE inhalation treatment of carbon monoxide poisoning endorsed by the Resuscitation Commission of the American Gas Association in 1923¹ has been used with increasing satisfaction throughout this country and Canada. Owing, however, to the fact that the treatment when first given is practically invariably in the hands of laymen, there has been less opportunity to critically evaluate the results obtained than is ordinarily the case in medical practice.

The experience of the authors with the inhalation treatment began in 1925, when the emergency crews of the New York Consolidated Gas Company received instruction in the method of giving treatment, in reporting upon the condition of gassed patients, and in the general features of asphyxiation from other causes. Since this time from seven to eight hundred cases yearly of carbon monoxide poisoning have been successfully treated in New York by these men. Without going into details, we have become convinced that the results attained have been excellent, but as experience progressed we have become aware of the existence of patients whose breathing did not increase greatly with the five per cent carbon dioxide mixture and who consequently revived very slowly and experienced a prolongation of asphyxiation. It has been our problem to consider giving more effectual aid to such individuals. When Henderson and Haggard² first advocated the inhalation treatment for carbon monoxide poisoning they mentioned the possibility that the heart could be endangered by the procedure. Rossiter³ and Sayers and Yant⁴ re-emphasized this same warning. We have felt it necessary, before advocating an increase in the content of carbon dioxide in

the inhalation mixture, to inquire as to the possible danger to the heart and circulation in the light of our experience and knowledge today.

Inhalation of five or seven per cent carbon dioxide in a normal resting subject is accompanied by but slight increase in blood pressure and volume delivery of blood by the heart. The situation is not at all analogous to that which occurs when carbon dioxide accumulates in the body during exercise. One of us has repeatedly watched the beneficial effects of five per cent carbon dioxide and ninety-five per cent oxygen inhalation in animals profoundly gassed, and has been impressed by the improvement in cardiac activity and circulatory condition which takes place.

It is quite true that in advanced carbon monoxide poisoning the heart dilates,⁵ the cardiac output begins to fail, and the blood pressure falls. These are, however, the non-specific symptoms of circulatory failure from lack of oxygen and from many other causes. If the heart has dilated considerably, it may remain so for several days,⁶ and it is this fact which causes the admonition to keep all cases of asphyxia at rest for some time after the accident. But the knowledge that the heart is thus affected by advanced carbon monoxide poisoning is of itself a strong argument for the use of the oxygen-carbon dioxide treatment. Carbon dioxide dilates the blood vessels of the heart, permitting improvement in the oxygenation and nutrition of the organ, and to a moderate degree increases the flow of blood into the heart. There is practical evidence for the favorable effect of the inhalation treatment on a failing circulation from several sources. Most noticeable is the widespread use of carbon dioxide inhalation to de-etherize patients after surgical operations. E. Levi,⁷ in Florence, Italy, first used this method, employing five to twenty per cent carbon dioxide with oxygen, and makes a

particular point of the favorable effects upon the heart. In 1920, Henderson, Haggard, and Coburn⁸ used six to ten per cent carbon dioxide in air and report excellent effects in cases where the circulation was bad.

A second line of evidence bearing upon the safety of the inhalation treatment for the heart and circulation comes from actual experience in the treatment of carbon monoxide poisoning. In 1925, an inquiry⁹ of all the users of inhalation apparatus (three hundred at that time) brought one hundred and eighty replies. While the greater number of these were returned by non-medical men, physicians' findings were frequently reported. In no instance was word received of the immediate collapse of seriously gassed patients as the inhalation treatment was begun. There are now at least one thousand users of the inhalation method in this country. No reports of sudden death or of circulatory failure with the institution of the treatment have appeared. The issue feared by Rossiter and by Sayers and Yant is not one of subtle medical distinctions. If the heart of a critically gassed patient was unfavorably affected by the inhalation treatment, the result would not be a matter of a few missed beats, of irregularity, or of further dilation. It would be death, for such patients are frequently at the very edge of death when they first receive treatment. And death would be so directly related to the beginning of inhalation as to cause immediate comment. In New York City we have opportunity to follow the successful treatment of between six and eight hundred cases of carbon monoxide poisoning yearly. There are about an equal number of deaths, over ninety-five per cent of these being dead when discovered. During four such years of experience we have no records of sudden death during inhalation, and it is impossible to consider that the precautions in the use of the treatment urged

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by Rossiter and by Sayers and Yant in the early days of the method need to be regarded today. This assertion may be made with equal validity for both five and seven per cent carbon dioxide in oxygen. Much higher concentrations of carbon dioxide than seven per cent have been observed to have no unfavorable effect on the heart and circulation of animals poisoned by carbon monoxide; they have been used for de-etherization in human beings and for the treatment of asphyxia in the new-born; and finally in the actual treatment of three hundred cases of gas poisoning, three of morphine poisoning, and nine of drowning by seven per cent carbon dioxide in ninety-three per cent oxygen no bad effects have been observed.

The details upon which the Resuscitation Commission recommended the use of the five per cent carbon dioxide plus ninety-five per cent oxygen inhalation mixture consisted of experimental and clinical reports submitted by Doctors Henderson and Haggard. Two general points were made by these data: first, that men and animals poisoned by carbon monoxide lose the gas from their blood more rapidly if they inhale carbon dioxide plus oxygen than through any other means of treatment; and, secondly, that carbon dioxide is required by the body during carbon monoxide poisoning in order to restore the general physicochemical equilibrium. Nicloux¹⁰ and his collaborators in France, and Walton¹¹ and his collaborators in America, have shown that the five per cent carbon dioxide inhalation mixture is apparently not as effective in removal of carbon monoxide from the blood as was indicated by Henderson and Haggard, but at the same time these authors agree that the inhalation mixture is the most efficient method of treating carbon monoxide poisoning. Neither Nicloux nor Walton present data on the condition of the animals treated, outside that contained in measurement of carbon monoxide removal.

There can be no argument upon the wisdom of using carbon dioxide inhalations to bring to normal the fundamental derangement inherent in such an alteration of the chemical equilibrium of the body. When a dose

of mercuric chloride is taken, the first thing to do is to get as much of the poison out of the body as can be removed and to do this as quickly as possible. There is, then, a secondary battle of equal importance, the allaying of symptoms referable to the action of the bichloride. The same point may be made in regard to carbon monoxide poisoning. The gas must be removed from the blood as fast as possible, and there is no doubt that the oxygen-carbon dioxide mixture now in use does this more rapidly than oxygen alone. The disagreement which has arisen does not deal with the truth of this statement but with the degree of superiority inherent in the oxygen-carbon dioxide mixture. During and possibly even after the removal of most of the carbon monoxide, carbon dioxide is apparently the ideal substance to readjust the body to its normal state.

The experiments of Nicloux and those of Walton contain no data on the acid base situation in the blood at the moment of instituting treatment, and do not present even a rough estimate of what may be called the respiratory ability of the animal at the moment when treatment was begun. Stadie and Martin,¹² in a careful repetition of work done by Douglas, Haldane, and Haldane,¹³ showed that any tendency of the blood to become alkalized causes it to seize and hold carbon monoxide with even more than normal avidity and also to fail to give up readily such oxygen as may still be carried. Conversely, anything which increases the hydrogen ion concentration of the blood will hasten the elimination of carbon monoxide.

In general summary, we feel the following to be a fair statement of the status of the inhalation procedure at the present time:

1. Dangers to the circulation very properly mentioned by Henderson and Haggard when the inhalation treatment was first started and reiterated by Rossiter and by Sayers and Yant, need no longer be considered. Upon the basis of both experimental and clinical observations the oxygen-carbon dioxide inhalation is beneficial to the circulation rather than harmful, and this is true in carbon dioxide concentrations as high as seven per cent.

2. On the basis of animal experi-

mentation, Nicloux and his collaborators and Walton and his collaborators present data, solely upon the release of carbon monoxide from the blood, which indicate that inhalation mixtures of oxygen and carbon dioxide, while better than oxygen alone, are not so decidedly superior as shown in the earlier papers of Henderson and Haggard.

3. When all of the possible effects of carbon dioxide for restoration of the normal physicochemical equilibrium in the body are considered, carbon dioxide possesses an importance which would make it most unwise to discontinue its use in carbon monoxide poisoning.

4. The data cited, together with observations¹⁴ on the inhalation of five and seven per cent concentrations of carbon dioxide by normal individuals have indicated to us the advisability of increasing the concentration of carbon dioxide in the inhalation mixture from five to seven per cent.

Field Observations upon the Use of Seven Per Cent Carbon Dioxide and Ninety-Three Per Cent Oxygen in Treating Carbon Monoxide Poisoning

Since 1925, we have had opportunity to observe the use of five per cent carbon dioxide and ninety-five per cent oxygen for carbon monoxide poisoning by the emergency crews of the Consolidated Gas Company of New York. At the present time there are ten emergency trucks manned by crews of three. They respond to all notifications of leaking gas, to fires and to all sorts of situations where asphyxia has occurred or is a hazard. The personnel of these crews changes but little. All the men are thoroughly drilled in giving artificial respiration, in handling unconscious patients, and in the use of inhalation apparatus. They have had instruction in the nature of carbon monoxide poisoning and other common types of asphyxia, and have been shown the value and necessity of making simple clinical observations on each case. It is certain that no group of men in the world has such a constant and large experience with carbon monoxide poisoning. In 1926, 789 patients were treated and recovered; in 1927, 715; and in 1928, 850. Owing to the fact that approximately sixty per

5 M Form 1382 4-28

Dept. _____ Station _____
 GAS COMPANY _____
 (Print Company)

ASPHYXIATION REPORT

Date of Accident _____

Name _____ Address _____

Age _____ Sex _____ Married or Single _____ Nationality _____

Kind of premises _____

Number of floor or apartment _____

Condition prior to asphyxiation _____

Condition when discovered: Conscious or unconscious _____

Breathing—Rate per minute _____

General Character (Check type observed)—Gasping and slow—Shallow—Rapid and Weak—
 Increased _____

Pulse—Rate per minute _____

General Appearance of Patient _____

Condition at end of treatment _____

Breathing _____

Pulse _____

General _____

Condition next day _____

Time and by whom discovered _____

Time last seen or heard _____

Where did gas come from (describe fully fixture or appliance) _____

If leak, where was it _____

Time of arrival of ambulance from _____

Name of attending doctor _____

Length of time Prone Pressure Method applied before arrival of Inhalator _____

By whom _____

Length of time Prone Pressure Method applied in conjunction with Inhalator _____

By whom _____

Length of time application of Inhalator _____

Fatal _____ Recovered _____

Was gas supply discontinued by you _____

Where does meter set _____

How many kinds of gas appliances used _____

Size of room _____ Height of ceiling _____

How many doors _____ How many windows _____

Report fully facts and circumstances _____

Date of report _____ Signed _____

Figure 1

cent of the cases are suicidal, the number found dead on arrival is large, slightly exceeding the number revived.

The men on the emergency crews have been trained to report all this experience upon the form shown in Figure 1, and have thus supplied a large volume of experience with which to contrast the alteration in practice introduced in March, 1929. At that time two crews were furnished tanks of seven per cent carbon dioxide and ninety-three per cent oxygen, with instructions to begin treatment with a tank of this seven per cent mixture and shift to the old five per cent concentration when the first tank was empty. This has meant from five to twenty minutes inhalation of seven per cent carbon dioxide in oxygen.

From the discussion in the beginning of this paper, some of the reasons for recommending this change have been gained. There are, however, two other important facts bearing upon the change. First of all, it has been found that the increase in breathing experienced by normal individuals who inhale five per cent carbon dioxide is not uniform. That is, we cannot say that this concentration will always triple or even further increase the breathing. In a series of normal men and women tested during the past spring it was found that the effect of five per cent carbon dioxide varied in different persons from less than a two-fold to a five-fold increase in respiration.¹⁴ The reasons for this variability are quite unknown. When seven per cent carbon dioxide is used, the variability persists but all individuals respond on a higher level, so that breathing is always doubled and may show even a seven-fold increase, the usual result being respiration five times normal. It is obvious that a patient whose breathing under normal conditions increases not more than one and one-half times when given five per cent carbon dioxide, will gain little from the usual inhalation treatment. If, however, he is given seven per cent carbon dioxide he will experience a greater augmentation of respiration and will have a better chance to gain oxygen and to lose carbon monoxide. A second fact makes it additionally important to use the seven per cent inhalation mixture in the early stages of treatment. Recent experiments by

one of us have shown that as carbon monoxide asphyxia develops the response to carbon dioxide stimulation becomes less. This is unimportant in mild poisoning but when patients are seriously affected and need oxygen at once, it must be understood that their ability to have the breathing stimulated by carbon dioxide is lowered, and in order to get the desired breathing the concentration of carbon dioxide must be increased.

Up to the present date, September 25, 1929, 300 patients have been treated with seven per cent carbon dioxide and ninety-three per cent oxygen. Emergency crews use a tank containing this mixture and when after a brief period, depending upon the depth of the breathing, this first tank is emptied they use five per cent carbon dioxide and ninety-five per cent oxygen to complete the treatment. In certain instances this last mixture has failed to give adequate breathing and the seven per cent mixture has again been used. There has been one death, which occurred thirty-one hours after the beginning of treatment. This case received seven per cent carbon dioxide in oxygen for eight minutes and then the five per cent mixture at intervals during the ensuing period. The individual was profoundly poisoned, never regained consciousness, and died slowly as is so often the case when protracted anoxemia has produced serious neurological damage.

The following reports will indicate the nature of our experience and the clinical utility of the seven per cent mixture.

Name: T. S. Date: April 1, 1929
Age: 67 Address:
Sex: Male
Condition prior to asphyxiation: Good health
Condition when discovered—conscious or unconscious: Unconscious
Breathing—rate per minute: 14
General character—(check type)—gasp & slow—shallow—rapid & weak—increased pulse—rate per minute: Not counted
General appearance of patient: Very bad
How long was 95% oxygen and 5% CO₂ applied: 20 minutes first time, 5 minutes later
Did breathing increase: Yes. To what rate:
At 5:15 rate 14
At 5:25 rate 18
At 5:35 rate 22
What was the type observed at this time:
Good deep breaths
How long was 95% oxygen and 5% CO₂ applied: 1 hour and 5 minutes
How long after beginning of treatment did the patient recover consciousness: 2 hours
Inquire if patient has headache—(check type)—slight—severe: Not recorded
Time of arrival of ambulance: 5:20 P.M.
What hospital: Bellevue
Doctor's name: Dr. B.
Did the doctor make any comment: Considered rate of recovery very remarkable in view of the patient's condition

Was prone pressure necessary in this case: No
How long: —
Do you think patient recovered consciousness more rapidly with the 7% CO₂ treatment: Cannot say
State other things of interest that occurred:

Name: A. L. Date: April 27, 1929
Age: 40 Address:
Sex: Male
Condition prior to asphyxiation: Good health
Condition when discovered—conscious or unconscious: Unconscious
Breathing—rate per minute: 8
General character—(check type)—gasp & slow—shallow—rapid & weak—increased pulse—rate per minute: 120
General appearance of patient: Poor
How long was 93% oxygen and 7% CO₂ applied: 30 minutes
Did breathing increase: Yes. To what rate: 32
What was the type observed at this time: Patient breathing normal. Still unconscious.
How long was 95% oxygen and 5% CO₂ applied: 3 hours
How long after beginning of treatment did patient recover consciousness: At the end of 3 hours patient was semi-conscious. Doctor said crew could do no more.
Inquire if patient has headache—(check type)—slight—severe:
Time of arrival of ambulance: About 7:50 A.M.
What hospital: Bellevue
Doctor's name: Dr. H.
Did doctor make any comment: No
Was prone pressure necessary in this case: No
How long: —
Do you think patient recovered consciousness more rapidly with the 7% CO₂ treatment: Yes
State other things of interest that occurred: While applying inhalator with 93% O₂ and 7% CO₂ for 10 minutes, noticed patient's breathing increased. Continued same for 20 minutes more when doctor requested crew to go to Bellevue. Crew applied 95% O₂ and 5% CO₂ for 3 hours when Dr. W. pronounced patient out of danger, but still in coma and left in Emergency Ward.

Name: F. C. Date: June 11, 1929
Age: 46 Address:
Sex: Female
Condition prior to asphyxiation: Good health
Condition when discovered—conscious or unconscious: Unconscious
Breathing—rate per minute: 8
General character—(check type)—gasp & slow—shallow—rapid & weak—increased pulse—rate per minute: 124
General appearance of patient: Pale, lips blue
How long was 93% oxygen and 7% CO₂ applied: 45 minutes
Did breathing increase: Yes. To what rate: 30.
What was the type observed at this time: Deep and regular
How long was 95% oxygen and 5% CO₂ applied: 3 hours
How long after beginning of treatment did patient recover consciousness: 3 hours and 15 minutes
Inquire if patient has headache—(check type)—slight—severe:
Time of arrival of ambulance: As crew arrived. What hospital: St. Vincents
Doctor's name: Dr. M.
Did doctor make any comment: No
Was prone pressure necessary in this case: No
How long: —
Do you think patient recovered consciousness more rapidly with the 7% CO₂ treatment: Yes
State other things of interest that occurred: After applying 93% O₂ and 7% CO₂ for 20 minutes, patient's breathing rose to 18. I then turned on 95% O₂ and 5% CO₂ and patient's breathing came down to 12 per minute and stayed that way for about 10 minutes. I then switched back to 93% O₂ and 7% CO₂ for 25 minutes and the patient's breathing came up to 24; and then started giving 95% O₂ and 5% CO₂ for 3 hours, when patient regained consciousness, breathing 30 per minute.

Name: C. L. Date: April 1, 1929
Age: 20 Address:
Sex: Male
Condition prior to asphyxiation: Good health
Condition when discovered—conscious or unconscious: Unconscious
Breathing—rate per minute: 16
General character—(check type)—gasp & slow—shallow—rapid & weak—increased pulse—rate per minute: Not taken

General appearance of patient: Chalky color
How long was 93% oxygen and 7% CO₂ applied: 5 minutes
Did breathing increase: Yes. To what rate: 20.
What was the type observed at this time: Patient lively and making motions to rise
How long was 95% oxygen and 5% CO₂ applied: 10 minutes
How long after beginning of treatment did patient recover consciousness: About 10 minutes
Inquire if patient has headache—(check type)—slight—severe: Refused to talk
Time of arrival of ambulance: 6:55 A.M.
What hospital: Bellevue
Doctor's name: Dr. B.
Did doctor make any comment: No
Was prone pressure necessary in this case: No
How long: —
Do you think patient recovered consciousness more rapidly with the 7% CO₂ treatment: Yes
State other things of interest that occurred: On arrival found C. L. lying on floor unconscious from gas poisoning. Applied 93% O₂ and 7% CO₂ at once for 5 minutes when patient began kicking and wanted to rise. Turned on to 95% O₂ and 5% CO₂ for about 5 minutes and patient fell into a semi-conscious condition. Again turned on 93% O₂ and 7% CO₂ for about 3 or 4 minutes and patient sat up but refused to talk.

RESPIRATION REPORT

Time	Resp. Rate	Treatment
5:15	14	7% CO ₂ and 93% O ₂ began
5:25	18	7% CO ₂ and 93% O ₂
5:35	22	7% CO ₂ and 93% O ₂
5:35-6:00		5% CO ₂ and 95% O ₂
6:00	18	5% CO ₂ and 95% O ₂
6:05-6:10		7% CO ₂ and 93% O ₂
6:10	21	
6:10	Turned back to	5% CO ₂ and 95% O ₂
6:15	25	5% CO ₂ and 95% O ₂
6:25	26	5% CO ₂ and 95% O ₂
6:35	28	5% CO ₂ and 95% O ₂
6:35-6:55		No inhalation
6:55	26	5% CO ₂ and 95% O ₂
7:00	28	5% CO ₂ and 95% O ₂
7:10	28	5% CO ₂ and 95% O ₂

At 7:10 patient could move freely and talk.

Conclusions

1. A study of the experience since 1923 in the use and experimental examination of the effects of five per cent carbon dioxide and ninety-five per cent oxygen in the treatment of carbon monoxide poisoning has indicated the wisdom of increasing the concentration of carbon dioxide to seven per cent for the first five to twenty minutes of treatment. The principal reasons for making this change are:

a. The fact that a certain number of individuals respond to carbon dioxide stimulation of breathing with comparatively slight increase when five per cent carbon dioxide is used, whereas with seven per cent there is satisfactory augmentation.

b. Response to carbon dioxide stimulation is lowered in dangerous carbon monoxide poisoning, and a seven per cent concentration is a better means of securing an increase in breathing of real consequence to the patient.

c. No experimental or clinical evidence has appeared indicating that the

increase in carbon dioxide to seven per cent carried with it the slightest danger. Indeed, all facts point to benefit to the circulation from seven per cent carbon dioxide in ninety-three per cent oxygen.

2. Three hundred cases of carbon monoxide poisoning have been treated by employing an initial inhalation of seven per cent carbon dioxide and ninety-three per cent oxygen for from five to twenty minutes, and completing the treatment with the usual five per cent carbon dioxide mixture.

The results of this field work have been uniformly good. Breathing is more active, consciousness returns more rapidly and after-effects have not been noteworthy. It is our intention to continue this technique in emergency work for the Consolidated Gas Company of New York.

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The Economics of Load Building

(Continued from page 154)

the year enabled us to get better acquainted and to better understand and appreciate one another's problems. Let me repeat that no effort has been made to rapidly or fully develop this situation; it represents only a very small part of what may ultimately be done. It is not all that could be desired. It has its problems and its difficulties but none, I feel sure, that cannot be overcome by fair dealing and patience. Our experience has strengthened the belief that we have much to gain by developing trade cooperation along sound and broad lines.

You will have observed that I have said little of merchandising other than in its relation to trade cooperation, for I have felt that in that as well as the other points earlier enumerated, as to the importance of the selling effort, competitive conditions and related factors, the question of merchandising was an integral part. Similarly I have said nothing of advertising, in part for the same reason, but also because there is nothing for me to say here but to express admiration for the initiative taken by this Association in developing its very complete and effective program of advertising which has attracted such widespread attention. There are many other important factors in the economics of load building that I have not referred to at all. No one person is ever likely to present that story in its entirety, except as a book, and if that book is ever written, and written properly, it will be one of the most notable and valuable contributions to the literature of the gas industry.

But this industry will not wait for a book to be written or for a Moses to appear. It is earnestly striving to improve and perfect its sales policies and methods, well knowing that unless it supplies a character of service that answers the public need, unless it stimulates the consciousness of that need, and unless its service is furnished at a cost that makes it advantageous to the user, the demand will diminish and finally cease.

But beyond that it is necessary that those charged with the direction of our promotional activities be brought into closer touch with and kept constantly and accurately informed of the

ultimate financial results of their work. The application of fundamental business law points to the more rational alignment of the various components of our sales activities in accord with sound economic principles, as one of the gas industry's pressing needs. It calls for the collective judgment of both sales and operating men, and an appreciation by each of their respective weight in the economic balance, where the words "net revenue" are weighed in terms of ordinary business meaning.

No one person can hope to accomplish all this unaided and alone, but it can be accomplished definitely and without too much delay if we undertake it as an industry, working together.

Fulfillment

(Continued from page 159)

lations Department, of all inquiries as to the questions that were asked by customers with reference to rates, and as far as practicable oft-repeated questions have been used as a cue by us in the preparation of assertions in connection with information given to customers about the rate reduction.

In this article the author has purposely avoided giving specific details as to what was done, because he has endeavored to show in what way and by what methods the company, in the case of this particular rate change, has undertaken to fulfill the prime purpose referred to in Mr. Insull's address.

Industrial Publicity

The Publicity Committee, Industrial Gas Section of the American Gas Association, directs attention to the following articles, recently published:

"Modern Shoe Manufacturing," *Materials & Material Handling*, March 1, 1930.

"Hardening and Tempering Furnaces at Ford Plant," *Fuels & Furnaces*, Feb. 1, 1930.

"Gas-Fired Ovens in Modern Bread Baking," *Foods Industries*, March 1, 1930.

"Gas Bake Oven Indirectly Heated," *Bakers Review*, Feb. 1, 1930.

"Manufacturing of Machine Gun Parts," *Army Ordinance*, Jan.-Feb. 1, 1930.

Putting All the Gas Dollars to Work*

By SAMUEL INSULL, JR.



Mr. Insull

AS Mr. Mullaney indicated to you, the gas business has a good deal of history behind it. It was originally started as a real monopoly, and just there let us pause for a moment to consider what a real monopoly is. A real monopoly exists when you are supplying a commodity which no one else can supply and which cannot be supplanted by any other commodity. If you were supplying a commodity which no one else can supply in a particular area but which can be supplanted by other commodities or other services, then you would not have a real monopoly. You have a paper monopoly.

The gas business was started as a real monopoly, principally, in the lighting business, and we all know what happened there. There are a few gas lighting installations still in service, and I don't know, parenthetically, whether we keep them as a matter of pride or a matter of economics. There are a few still in service, but in the main gas lighting is gone, but the gas business wriggled through and is still here and in pretty fair shape anyhow.

The next stage of the business was when we had a real monopoly on domestic heating in congested areas. I do not mean, in the main, heating of houses, but miscellaneous heat applications to a domestic establishment in a congested area, in a city particularly, in the apartments, where it was impracticable to drag up coal, and in any place where the scale of living had gotten to a point where people wouldn't bend over a coal stove; in the early stages of this era, the gas business had a monopoly on kitchen heat and other miscellaneous forms of heat. We have not even a paper monopoly in that

field any more, because in a good many cases the electric business is competing with us in many forms of domestic heat. We have not a real monopoly in anything at all. So I think what Mr. Mullaney intended to indicate, not to you gentlemen entirely but to the industry as a whole, was that the background of the business as a real monopoly is a good deal of detriment at the moment.

Let us consider where we are at at the present moment. We are competing, not only with other forms of heat, but we are competing with other forms of life. When we sell a kitchen range, we have to make it attractive enough to cook on. If that were possible, a woman would prefer to cook on that range rather than to go out and dine in a restaurant. If we are going to sell our various domestic heating establishments, they are only going to be used if the family finds the home more attractive than the movie house. That may seem to get pretty broad and pretty far afield. But what I am trying to indicate to you that it is no use in God's world to put a range in a kitchen if it is not going to be used, and there is no use to put a lot of space heaters in a house if they are not going to be used. As a matter of fact, it is no use to put house heating into a house if for thirty or forty or fifty per cent of their spare time the residents of that house are going to be running around in a flashy automobile or going to the movie theatres.

What have we got to do? We not only have to install these appliances in the houses, but in so doing we have to make the house sufficiently more attractive to compete with the multifarious outside attractions that have grown up around modern life. We have to sell the people, then, first on convenience. In the old days, under a real monopoly, about all you had to sell them on was practicability. Will it work? If it works, it is the only thing I can use anyhow. Then, in the next state, when you had a partial monopoly on the kitchen heating, about all you had to sell them on was practicability and convenience. Will

it work and will it be more convenient than these other out-of-date things I can use? But nowadays you have to sell them on the basis of attractiveness. Let's put a little sex appeal into the kitchen stove. You are competing with the high-grade talkie; the super-film; you are competing with a thousand-dollar automobile that will go sixty miles an hour; you are competing with all of the outside attractions of the outside restaurant, where Papa can have anything he wants to eat and Mama can show her hat to the people at the next table.

If you can make that home attractive enough, if you can sell the people in it the idea that it is attractive enough so they will not only want to stay there instead of going to the movies or going around in the automobile or going to the restaurant, they will find a certain satisfaction in it, and Mama will want to leave the kitchen door open when their friends come in, so she can "show off" that stove. It is the same as in the restaurant, where she will keep on her coat, although it is awfully hot, just so the people at the next table can see it. When you have done those things, then you have sold gas service under modern conditions of life. But it is no use to go out and try to sell people, as we all know, on just practicability. It is no use to go out and try to sell people on just practicability plus convenience. That is old stuff. What you have to sell them on is attractiveness.

I think, to give them due credit, the equipment manufacturers have a great deal coming to them, because they have demonstrated an effort to make a lot of these domestic appliances look better. I am not interested so much in whether these things look better. I think some of them are terrible; I wouldn't have them around my place. But the important thing is that somebody is trying to make them look better. I know in sales work it is important that you have a definite plan, and I am very much interested, in seeing your agenda here, in the fact that you are discussing definite plans. But as you have your mind on those, I

* Address delivered before the Mid-West Regional Gas Sales Conference, Chicago, February 13, 1930.

am not going to deal with them. I am going to leave that to you gentlemen who come after me and know a great deal more about it than I do. However, you know you have a great deal more chance in killing a duck with two barrels full of B-B shot than you have with one rifle shot, although the rifle shot is a good deal higher powered than the B-B shot. And in dealing with the mass reaction of the public, you have to have a certain amount of waste motion. You have to let off both barrels at once.

What the gas business needs within and without, what it needs in its sales departments, what it needs on the part of the merchandising interests, what it needs on the part of the publicity people, is not only to recognize (which I think we are beginning to do) but to act upon the fact that we have to sell the attractiveness of gas appliances and not just their practicability and convenience.

That is pretty general, perhaps, but you men can put the thing into execution. This business is in a vital phase today. We are competing not only with people in the same line of business, but we are competing with other lines of business, and new competitors in that field are springing up every day. We all know the old story about the competition for the consumer's dollar. That is and always will be. But how are we going to attack it? We have to attack it by making the product which we are trying to sell and the appliances which are going to sell that product for us appeal on the ground of attractiveness, to use a hackneyed phrase; we have to sell our service to the public on that basis.

Let us consider for a moment what result that will have on business as a whole. As Mr. Mullaney said, the gas business is pretty well engineered. As a matter of fact, most of the small gas plants in the country are overbuilt about fifty per cent, and all the distribution systems in the country are overbuilt to some degree. That statement does not constitute a criticism of the engineers. It is merely because the capacity of a gas distribution system is a pretty elastic thing, and if you get more business you can increase the capacity of that system without increasing the investment in proportion to the business you have gotten. So,

from an engineering point of view, there are a good many dollars in the gas business that are not now working fully, and it is up to the sales department to put those dollars to work.

From a financial point of view, the gas business is in pretty fair shape, but there is one big question in the mind of the investor about the gas business. He has seen the change from lighting and cooking. He has seen, although he does not fully appreciate it, the change from cooking to other appliances that has been brought about by the greater use of the restaurant, even in our smaller communities. In other words, he has seen that the gas business, apparently well entrenched, can slip. On the other hand, the thing that worries him is that in its good years the gas business does not expand at a very large rate. It expands at a respectable rate but not much more. So the question in the investor's mind is whether the gas business can build up enough additional business in case another one of those adverse reactions is going to take place. (I don't say that it will.) The investor not only wants to know he is safe; he wants to know he is going to be safe.

So the thing that will give gas security—and I am not making just the sales talk to you gentlemen) I know—it has been my privilege to sell securities, if privilege it is, under a good many conditions, and the further away you get from the property, the more emphasis does the investor lay on the question of increase. That is the thing they ask you. They look at your earning statement and say, "Let's see what your increases are." The one thing that will give more stability to the finances of the gas industry, and stability only comes on demand on the part of the investors for their security—the one thing that will create more demand for gas securities than anything else is for us to increase the rate of expansion of the business. Because then you will put into the hands of the man who is trying to sell the securities the statement which will show that no matter if some reverses come about we are expanding at such a rate that we will overcome them.

From the third point of view, from the public point of view, it is a hackneyed, pretty well-worn phrase, but there is no other to describe it than the

public relations point of view. Public relations, to my mind, is not a question of what you tell the public about yourself. It is a question of what the public thinks about you. We all know the weakness of being oversold. We all know the fellow who comes into our office who has a good argument, and as long as he is there we are all for him. The minute he goes out the door, it is all over and we are worse off than we were before, because he has concentrated on talk and not on effect. He has gone at our mind from the outside in and not from the inside out. And the greatest fact in public relations is that your customers should feel you have done something for them and not done something to them in selling them a service.

This question of selling our service on the basis of attractiveness, of modernity, of being the latest thing, is the one thing that is going to do more for our relations with the public than anything else. Look at the automobile business. They have merged and merged and remerged; have had crazy capitalization. They have had failures. They have raised the price. They have lowered the price. They have done everything, but do you hear any public demand or any public outcry against the automobile business as a great, big octopus? Do you hear any outcry against the largest unit of the automobile business as a trust? No. Why? Because each year the seats are softer, the springs are better, the automobile runs faster and looks shinier, and the public says, "What is all this to me if the result is I am getting better service?"

Look at some of these other businesses that have sprung up in the last few years, where, in order to get themselves established, they have had to appeal on the basis of attractiveness, of modernity, of giving the fellow more service. Look at them, and then let us pattern our sales activities along their lines. It is all very well and a fine thing for you gentlemen to go out and sell more water heaters and sell more incinerators, sell more gas refrigerators and what not. But unless you have sold them on the basis that the man or woman had the desire for the service first and the appliance came along afterward; unless you have sold them on the basis that they have gone

into the house as a real factor in attractiveness and the appeal of that house, you are not going to get anywhere in the long run. Because pretty soon it is going to be misused, and when it gets out of order and is obsolete it is going to be just that thing over in the corner.

To sum it all up, we have been through a great many phases in the gas business, all of them increasing competition, and we are now in the face of wide open competition on the basis of conditions of living. We have to sell our service and the appliances that consume our service along the lines of attractiveness, of appeal. When we look around us and see many other industries, they have done that same thing. We can look at their advertising matter. If we can stand it, we can listen to their salesmen. We can trace their arguments all the way through and see they are those of indirect appeal rather than of fundamental quality. The fundamental quality has to be there, but that is not enough. It is like the girl who is nice to her mother. She has to be good looking at the same time.

If we can put our equipment and our commodity on that basis, if we can sell it on that basis, we are going to do a real job and the reason is this: From an engineering or economic point of view, there are lots of dollars in the gas business that are not working and we can put them to work. Second, from the point of view of the finances of the gas industry, the one thing that will increase the demand for gas securities more and therefore bring down the price that gas companies must pay for money more than anything else is to increase the rate of increase of the business. That is the thing which is the cardinal point with the investor. Finally, from the point of view of our public relations, if we can get ourselves talking like the Sunday Supplement (if you will permit me to use that comparison) right into the hearts of our customers, if we can make them feel we have done something for them instead of having done something to them, when we sell them an appliance or a service, then we have done the greatest single service that it is possible

for the gas industry to do, from the point of view of our relations with the public.

I apologized at the outset and apologize now for being altogether general. On the other hand, I don't know anything about sales methods, and if I started to talk to you about them, you would know it. It has been my privilege to look at the broad aspect of the business as to why things happened

and why they didn't happen, and although you have to concentrate on the detailed method of doing things, and in conferences like this I think you should concentrate on the exact way of doing things, you have to have a background to the picture, and the background to the picture is that we have competition all the way along the line on the basis of attractiveness of our service.

Expect Many at Spring Conference

THE Second Annual Spring Conference of the Accounting Section promises to eclipse the fondest hopes of even the most optimistic, Chairman John L. Conover announces in a letter to the membership. He said that all arrangements have been made to insure its success. The program is completed, copies of the papers to be delivered are already coming in and additional copies are being prepared for advance distribution, several manufacturers of office labor-saving devices are planning to exhibit their equipment, publicity plans are being carried out, and a large attendance seems assured.

The north ballroom of the Hotel Stevens, a room considerably larger than the south ballroom, where the meeting was held last year, has been reserved tentatively in anticipation of a large gathering.

The only change in the program originally approved by the Managing Committee is in the Friday afternoon session—F. G. Atkinson, of Henry L. Doherty and Company, will deliver a paper on "Training the Supervisor," in place of P. W. Herring, who found it impossible to present a paper on "Rating Scales," as originally planned.

Both the Addressograph Company and the Elliott Addressing Machine Company are expected to display new combination bill printing and addressing machines—recent developments. Remington-Rand will have a full line of Remington, Powers and Dalton equipment, including the new Dual Unit Dalton Public Utility Billing Machine. Burroughs Adding Machine Company will demonstrate various public utility accounting set-ups such as payroll accounting, stores account-

ing, etc. It is expected also that other nationally known manufacturers will exhibit their equipment.

The next meeting of the Managing Committee of the Accounting Section will be held on Saturday morning, April 5, at the Hotel Stevens, following the Spring Conference. Further announcements concerning the meeting will be made during the Conference sessions.

Michigan Gas Companies Achieve Record Output

Michigan gas companies achieved a record output of approximately 38 billion cu.ft. of manufactured gas in 1929, according to records and estimates compiled by the Michigan Public Utility Information Bureau.

This is an increase of more than 3,500,000,000 cu.ft., or close to 11 per cent, over 1928 gas sales. It maintained the pace set in 1928 when the gain over the previous year was 11.7 per cent.

The greatly enlarged use of gas is ascribed to a combination of causes, each reflecting the economic and social advancement of Michigan. These causes include: The growing employment of gas in industry; the larger use of gas in the home, particularly for water heating, refrigeration, and incineration; the development of house heating with gas; the extension of high-pressure gas service to outlying towns and communities from central manufacturing plants; and the growth of population.

The number of gas customers in Michigan grew from a total of 687,090 at the beginning of 1929 to around 725,000 at the end of the year.

Revenues of the Michigan gas companies aggregated around \$34,750,000 for the year, a gain of approximately 10 per cent.

Construction plans of Michigan gas companies call for expenditures in 1930 exceeding \$10,000,000.

Personal and Otherwise

Robert B. Harper, formerly chief testing engineer of the Peoples Gas Light & Coke Company and for years its chief chemist, has been chosen vice-president in charge of research. He is well known to many members of the gas industry throughout the United States.



R. B. Harper

Allen Schawwalder, formerly a member of the research engineering department of The Pittsburgh Equitable Meter Company, has been transferred to the branch factory in Los Angeles.

C. E. Scott, manager of the Burlington district of the North Carolina Public Service Company, was recently advanced from vice-president to president of the Burlington Chamber of Commerce.

Edgar A. VanDuesen, resident engineer of the Central Hudson Gas and Electric Corp., has resigned to take a position with the Engineering Department of the Inland Utilities, Inc., of New York.

Raymond J. Everest, manager of the Salisbury district of the Southern Public Utilities Company, was recently elected president of the Salisbury Chamber of Commerce.

Eugene Whitcomb, of Pittsburgh, Pa., has been appointed sales manager of the Fort Worth Gas Company, Fort Worth, Texas. Vernon R. Brown was named assistant sales manager of the same company.

Earle A. Clarke, long connected with the Oklahoma Natural Gas Corp., has accepted a position as assistant to H. A. Wallace, president of the Charleston group of the Columbia Gas and Electric Co.

B. P. Stockwell, general manager of the Oklahoma Utilities Company and properties of the Empire Public Service Corporation in Oklahoma and Kansas, has been made a vice-president of the parent organization, The Empire Public Service Corporation.

Miss Katherine Turck, for the past twenty-six years a valued employee of the Saugerties Gas Light Co., has retired from the company.

J. Edward Davey was recently elected assistant treasurer of Columbia Engineering & Management Corporation.

Theodore H. Kendall has been appointed general superintendent of distribution of the Equitable Gas Co., succeeding J. A. Reed, who retired March 1 after 25 years of service with the company.

J. R. Harvin, formerly associated with Cravath, de Gersdorff, Swaine & Wood, was recently elected assistant secretary of Columbia Engineering & Management Corporation.

Harry P. Carroll, head of the Dixie Gas and Fuel Company and district manager of the Moody-Seagraves interests, has been promoted to operating manager of the Houston Gas and Fuel Company.

Nils T. Sellman, director of sales and utilization, has been chosen chairman of the newly formed Commercial Council of The Consolidated Gas Company of New York and Affiliated Gas Companies. F. L. Hallock, commercial manager of the Bronx Gas and Electric Company, was made vice-chairman, and H. F. Weeks, assistant manager of the Advertising and Display Bureau, was elected recorder.

O. P. Simler, vice-president and general manager of the Hoffman Heater Company, has been named a vice-president of the National Gas Appliance Manufacturers Association.

Alan D. Whittaker, who is retiring as engineer of production of the Atlanta Gas Light Company after twenty-two years of service, was tendered a banquet recently by the employees of his department. He was further honored by the presentation of a beautiful loving cup.

Ralph E. Hartzell, who for the past two years has been in the advertising department of the Kansas City Gas Company, has accepted a position as head of the advertising department of the Dominion and Republic Gas Company group.



H. Edwin Olson was recently elected assistant treasurer of Columbia Engineering & Management Corporation, it has been announced at the headquarters of that concern in New York City.

H. E. Olson B. M. Lester has been named general auditor for the Oklahoma Gas & Electric Company, it is announced by Bernard F. Braheney, vice-president of the Byllesby Engineering & Management Corporation.

Chauncey I. Weaver, vice-president and general manager of the Ohio Edison Company, Springfield, has resigned to become general manager of the Union Gas & Electric Company and the Cincinnati Gas & Electric Company of Cincinnati, Ohio. Both companies are a part of the Columbia Gas & Electric System.

J. A. White has resigned his position as local and district manager for the Stamford & Western Gas Company.

E. J. Sullivan has been appointed director of safety for the Arkansas Natural Gas Corporation, of Shreveport, La., and its subsidiaries.

Mrs. Harrison Trautmann won first prize in the essay contest recently conducted by the Rockford Gas Light and Coke Company in connection with their campaign of education regarding the coke product of the plant.

Eli R. Cunningham, formerly assistant superintendent of operations of the United Gas Company, Houston, Tex., has been promoted to superintendent, succeeding J. W. Bartlett.

E. J. Wilson has been appointed superintendent of the Bangor Gas Light Company's new plant, according to a recent announcement. Edward D. Baker, formerly plant superintendent, has been made manager of the coke department.

S. Gailliard, who has been associated with gas companies for the past twenty years, has assumed the duties of sales engineer with the Anderson Gas & Utilities Company.

Atlanta Celebrates Natural Gas Advent

ONE of the greatest arrays of public utility officials ever to assemble in Atlanta attended the banquet held in that city by the Central Public Service Corporation on the evening of February 25, in celebration of the advent of natural gas service in the Southeast.

Virtually every phase of official, industrial and professional life was represented among the nearly 400 guests assembled in the main ballroom of the Atlanta Biltmore Hotel, with hospitality and enthusiasm over the arrival of the new domestic fuel as the keynotes of the gathering.

The banquet, which was one of the most brilliant ever staged in Atlanta, was tendered by the Central Public Service Corporation on behalf of the Southern Cities Public Service Co. and the Atlanta Gas Light Company as a compliment to the Southern Natural Gas Corporation officials and directors who sponsored the movement to bring to Atlanta natural gas piped over nearly 500 miles of lines from Louisiana.

Honor guests at the speakers' table were Colonel Albert E. Peirce, president of the Central Public Service Corporation, who delivered the address of welcome, and J. H. White, president of the Southern Natural Gas Corporation, who responded. R. Curzon Hoffman, Jr., vice-president of the Southern Cities Public Service Co., served as toastmaster.

Technical Section

B. V. PFEIFFER, Chairman

H. W. HARTMAN, Secretary

R. G. GRISWOLD, Vice-Chairman

Fourth Joint Production and Chemical Conference

THE Fourth Joint Production and Chemical Conference, held under the auspices of the Carbonization, Water Gas and Chemical Committees of the Technical Section, has been scheduled this year for the Cleveland Hotel, Cleveland, Ohio, on May 21, 22 and 23, 1930.

Secretary H. W. Hartman says he expects that more than 500 production engineers and chemists will gather in Cleveland to discuss their problems.

Each of the committees contributing to the Conference have produced an outstanding program of subjects within their scope which are briefly described in the following statements of the respective program chairmen:

CARBONIZATION COMMITTEE SUBJECTS

By R. S. McBride, Chairman, Carbonization Program Committee, Colorado Bldg., Washington, D. C.

The General Carbonization Session will treat of those operating problems in coal processing plants which have to do with selection of coal, generation of fuel gas, and waste disposal. The results already obtained by the Coal Survey Subcommittee are highly indicative of important findings and these preliminary results will be outlined by Mr. Davis of the Bureau which is directing this joint undertaking of the A. G. A. and the Bureau of Mines.

Efficient production of gas for underfiring of batteries in producers will be treated from several points of view by the Gas Producer Subcommittee. The use of bituminous coal and the disposal of fouled air for liquid purification plants will be two of the principal topics reported upon by this committee group. The same subcommittee will discuss important trends in the use of built-in producers for carbonizing plants. This type of unit, particularly important for vertical retorts and benches, is still a factor deserving this special subcommittee's attention.

The question of waste disposal has been subdivided into three parts for consideration at this meeting, namely, control of smoke, dust, odor and gases, and the recent achievements in this field will be

summarized. Liquid waste disposal has received special attention in the field of control of phenol-bearing effluents. The chairman of this subcommittee will present the third problem of disposal of non-phenolic liquid wastes and the solid wastes from various types of carbonizing appliances.

Recognizing that the proper preparation and effective marketing of coke has become practically the most important factor in further development of carbonizing systems, the Carbonization Committee plans to devote an entire session of the Production Conference to the theme "Coke." Two important surveys being made by the Coke Committee will be summarized—one treating of the present sizing and preparation methods, and the other of coke marketing problems. The Conference will also receive a statistical résumé giving the present economic situation of coke and a paper summarizing our present knowledge on the effect of coal washing upon coke properties. The third special paper will treat of the subject "the properties of coke which affect its performance as a domestic heating fuel."

CHEMICAL COMMITTEE SUBJECTS

By A. R. Belyea, Chairman, Chemical Program Committee, The Consolidated Gas Company of New York, Laboratories, Astoria, L. I., N. Y.

In developing the program for the Chemical Sessions of the 1930 Conference, the Program Committee has again provided a morning session of interest to operators and engineers as well as chemists and an afternoon session of primary interest to the Chemical Group. The committee feels, however, that all attending this year's Conference will find much of interest at both sessions, regardless of the branch of the industry in which they are engaged.

The increasing use of coal for water gas generator fuel and carbonization purposes has brought to the fore the necessity for classifying coals as to their properties. Dr. G. St. John Perrott has prepared an interesting paper covering new developments in the testing of coals and the use of these newer tests as an aid in coal classification. This paper opens the morning session.

Chemical methods of gas oil evaluation will be discussed by J. E. Brewer of Chemical Service Laboratories, Inc., Philadelphia, Pa. His experience with the application of these methods to a wide

variety of oils will illustrate their present applicability in predicting suitability for carbureting purposes.

The increasing importance of natural gas, the recent strides in recovery and utilization of liquefied petroleum hydrocarbons and current progress in reforming both natural and still gases prompted the committee to include a paper on this interesting subject. We feel fortunate in securing H. J. Nichols, Jr., of the Standard Oil Company of New Jersey, to tell us of the relationships between the petroleum and gas industries and we anticipate an animated discussion following this paper.

In the final paper of the morning session, Dr. F. E. Vandaveer of the A. G. A. Testing Laboratory will tell of the production of gases of varying physical and chemical properties for use in testing the effects of these properties on appliance operation.

The program for the afternoon session may be divided into three general groups, namely: 1. Research; 2. Chemical Engineering; 3. Laboratory Equipment and Management.

The first group presents: first, the results of an investigation of the Walters Method for the determination of naphthalene, by J. F. Anthes, of the Brooklyn Union Gas Company; and second, further work by Johns Hopkins University on organic sulphur compounds in gas making, by Prof. W. J. Huff and J. C. Holtz.

The second group consists of two chemical engineering papers from the Massachusetts Institute of Technology. The first, by H. C. Hottel, discusses the application of optical pyrometry to the measurement of luminous flame radiation and temperature. The second, by T. A. Mangelsdorf, presents interesting work on the calibration of large capacity gas meters.

The third group, stressing equipment and management, consists of a paper by J. M. Gonder, of the Koppers Company, which tells just what 1930 model chemical and sample laboratories should be like to insure 1930 production speed. The second paper of this group, by M. C. K. Jones, of the Consolidated Gas, Electric Light and Power Company, of Baltimore, discusses laboratory management, selection and training of personnel, and choice of proper methods and equipment.

A Chemical Committee Dinner will be held during the Conference, to which all attending delegates are invited and at which important matters of policy will be discussed.

WATER GAS COMMITTEE SUBJECT

John H. Wolfe, Chairman, Water Gas Program Committee, Consolidated Gas Electric Light & Power Co., Baltimore, Md.

The contributions of the Water Gas Committee to the Production Conference programs cover the two sessions allotted to it and embody a wide and varied list of subjects. Many of these are being broadcast for the first time and should prove of great interest to all gas engineers and chemists and particularly to water gas operators.

At the first of the meetings of this section, the problem of processing and treating oil gases and carburetting oils will be considered. The increased utilization of refinery oil gases by gas plants will result in great interest in a paper which will outline the "Economies of Reforming of Refinery Gases." This paper will be delivered by C. A. Schlegel of the United Engineers and Constructors, Inc., who will cover the application of refinery gases to cold enrichment, base load gas and replacement of carburetted water gas. A second paper by R. G. Rincliffe of the Philadelphia Electric Company will describe the plant and operations of the Refinery Gas Reforming Plant at Chester, Pa.

A paper on "Recent Developments in Carburetting Water Gas with Bunker Oils" by J. V. Richards of the Public Service Electric and Gas Company, will reflect the gas industry's ceaseless efforts toward reducing the cost of manufacturing water gas. No operator can afford to miss this most instructive paper.

The second paper in a symposium, of which the one just mentioned is the first, will be on "The Cracking of Heavy Oils and Tars" by Dr. Gustav Egloff of the Universal Oil Products Company. Dr. Egloff is an Oil Technologist of national standing and his paper should engender a new interest in this, one of the water gas operator's most baffling problems.

Our friends on the Pacific Coast will be represented by J. A. Harritt of the San Diego Gas and Electric Company who will furnish a paper on "A Recent Development in Oil Gas Production." This paper will relate of the progress which has been made in producing oil gas on oil gas sets.

Several installations have recently been made of the Dayton Process as standby equipment and also for reforming. A paper on the "Present Status of the Dayton Process" will be delivered by Hugh E. Ferguson, Senior Chemist, of the Peoples Gas Light and Coke Company.

Because of the widespread interest in dehydration of manufactured gas and rehydration of natural gas, the paper by C. W. Garrison of the Western Gas Construction Company on "Gas Conditioning" should command attention.

After this series of papers with attendant discussion, an "Open Forum" will be held in which water gas operators and others will discuss their mutual prob-

lems. This is an excellent clearing house for information on subjects of vital interest to all gas men.

The second of the Water Gas section meetings will begin with a Symposium on Automatic Grates and Chargers. J. S. Haug, Consulting Gas Engineer of the United Engineers and Constructors, Inc., will describe "The U. G. I. Mechanical Generator." This description will outline early experience with the apparatus and will cover the fundamental requirements as well. The method of controlling temperatures and the conditions and distribution of the gas making fluids in the fire with relation to efficiency and capacity will be enlarged upon. Operating results, length of service cycles and maintenance data will also be presented.

Description and operation of the A. B. C. Mechanical Grates will be brought up to date in two papers. The first of these will be on "New Developments in the A. B. C. Grate" by H. B. Young of the Chicago By-Product Coke Company. The second paper will be by R. E. Titus of the Kings County Lighting Company, which will describe and report on the operations in his plant. Interesting developments on the equipment will be outlined and operating results discussed.

Two papers on the Operation of Mechanical Grates with Soft Coal will follow. These will be presented by G. T. Bentley of the Detroit City Gas Company and L. J. Eck of the Minneapolis Gas Light Company who, it will be interesting to note, use almost diametrically opposite methods for obtaining excellent results. Provision is being made for an animated discussion of the papers presented in this symposium.

Walter M. Russell, Gas Engineer of the Gas and Electric Improvement Company, is to present a paper on "Low Cost Manufactured Gas" in which he will describe the equipment, operation, and cost record of a new plant of the Arlington Gas Light Company. A valuable portion of the paper is that part dealing with a cost study of all other water gas plants in Massachusetts of medium or large size comparable to the Arlington plant, and some data as to the investment costs in such plants.

The increasing interest in the use of Propane and Butane gases will be focused on a paper on a "Plant for Mixing and Distributing Butane-Air Gas at North Manchester, Ind.," by T. J. Kelly, Gas Engineer of the Utilities Service Company. This plant has been erected for the specific purpose of utilizing Butane, and the paper will include such items as cost of plant, description of apparatus, methods of storage and mixing and methods of distribution.

The Water Gas Section program will be brought to a close by the reading of a report on "Summary of Water Gas Committee Activities" by the Chairman of the Operators' Section, Alan E. Lockwood, Gas Engineer of the American Electric Power Corporation. This will

be in the nature of a progress report and will outline work under way or projected by the Water Gas Committee.

INSPECTION OF A. G. A. LABORATORY

Holding the Conference in Cleveland will afford the chemical and production engineers an opportunity to inspect the A. G. A. Laboratory. A schedule is being arranged of daily trips by buses from the Cleveland Hotel to the Laboratory which will enable the attending delegates to plan their inspections of the Laboratory in small groups and with minimum interference with the Conference sessions.

The tentative program follows:

First Session

Wednesday, May 21—10:00 a.m.

Chemical Committee Subjects—

Dr. S. P. Burke, Presiding

Opening Remarks, S. P. Burke, Chairman, Combustion Utilities Corp., New York, N. Y.

Welcome to Cleveland.

New Developments in Coal Testing, Dr. G. St. John Perrott, Supt., Pittsburgh Experiment Station, U. S. Bureau of Mines, Pittsburgh, Pa.

Experiences with Chemical Evaluation of Gas Oil, J. E. Brewer, Vice-President, Chemical Service Laboratories, Philadelphia, Pa.

Relationships between the Petroleum and Gas Industries, H. J. Nichols, Technical Service Division, Standard Oil Co. of New Jersey, Bayway, N. J.

The Effect on Appliance Operation of Chemical and Physical Variations in the Gas Supply, Dr. F. E. Vandaveer, Supervisor, A. G. A. Testing Laboratory, Cleveland, Ohio.

Second Session

Wednesday, May 21—2:00 p.m.

Water Gas Committee Subjects—

I. K. Peck, Presiding

Paper—Economies of Reforming of Refinery Gases, C. A. Schlegel, Sales Mgr., United Engineers & Constructors, Inc., Philadelphia, Pa.

Paper—The Refinery Gas Reforming Plant at Chester, Pa., R. G. Rincliffe, Supt. of Prod., Philadelphia Electric Co., Philadelphia, Pa.

SYMPOSIUM—Utilization of Oils for Carburetion.

Paper—Recent Developments in Carburetting Water Gas with Bunker Oils, J. V. Richards, Supt., Public Service Electric & Gas Co., Trenton, N. J.

Paper—The Cracking of Heavy Oils and Tars, Dr. Gustav Egloff, Oil Technologist, Universal Oil Products Co., Chicago, Ill.

Paper—A Recent Development in Oil Gas Production—J. A. Harritt, San Diego Gas and Electric Co., San Diego, Cal.

Paper—Present Status of the Dayton Process, Hugh E. Ferguson, Senior Chemist, The Peoples Gas Light & Coke Co., Chicago, Ill.

Paper—Gas Conditioning, C. W. Garrison, Sales Engr., Western Gas Construction Co., Ft. Wayne, Ind.

Third Session

Thursday, May 22—10:00 a.m.

Carbonization Committee Subjects—
Fred Denig, Presiding

Opening Statement, Fred Denig, Chairman, Philadelphia Coke Co., Philadelphia, Pa.

Survey of Gas and Coke Making Properties of American Coals—Report of Committee, A. C. Fieldner and J. D. Davis, Bureau of Mines.

Gas Producer Operation—Report of Committee, J. S. Haug, Chairman, United Engineers & Constructors, Inc., Philadelphia, Pa.

Built-in Producers, F. J. Kennedy, General Manager, The West Gas Improvement Co. of America, Inc., New York.

Underfiring Horizontal Retorts with Bituminous Coal, R. F. Davis, Utilities Service, Inc., Indianapolis, Ind.

Use of Fouled Actifier Air in Gas Producers, M. T. Herreid, Connecticut Coke Co., New Haven, Conn.

Factors Influencing Gas Producer Operation, Dr. George V. Slottman, Director, Buffalo Station, Massachusetts Institute of Technology.

Test Code for Carbonizing Plants—Report of Committee, F. J. Pfluke, Chairman, Rochester Gas & Electric Corp., Rochester, N. Y.

Plant Waste Disposal—Report of Committee, A. R. Powell, Chairman, Koppers Company Laboratories.

Gases, Smoke, Dust and Odors, C. R. Bellamy, Columbia Gas & Electric Corp., New York, N. Y.

Phenol Effluents, E. G. Boyer, Philadelphia Electric Co., Philadelphia, Pa.

Solid Waste and Non-Phenolic Liquid Wastes, A. R. Powell, Koppers Company Laboratories.

Fourth Session

Thursday, May 22—2:00 p.m.

Chemical Committee Subjects—
Dr. S. P. Burke, Presiding

An Investigation of The Walters Method for the Determination of Naphthalene, J. F. Anthes, Asst. to Chf. Chemist, The Brooklyn Union Gas Co., Brooklyn, N. Y.

Some Chemical and Thermodynamic Effects in the Formation of Organic Sulphur Compounds in Gas Making, W. J. Huff, Professor of Gas Engineering, and J. C. Holtz, The Johns Hopkins University, Baltimore, Md.

The Application of Optical Pyrometry to the Measurement of Luminous Flame Radiation and Temperature, H. C. Hottel, Dept. of Chemical Engineering, Massachusetts Institute of Technology, Cambridge, Mass.

The Calibration of Large Capacity Gas Meters, T. A. Mangelsdorf, Dept. of Fuel and Gas Engineering, Massachusetts Institute of Technology, Cambridge, Mass.

The Design of Chemical and Sample Laboratories for Gas Plants, J. M. Gonder, The Koppers Co. Laboratories, Pittsburgh, Pa.

The Chemical Control of Gas Manufacture, M. C. K. Jones, Chf. Chemist, Consolidated Gas, Electric Light & Power Co., Baltimore, Md.

Fifth Session

Friday, May 23—10:00 a.m.

Water Gas Committee Subjects—
I. K. Peck, Presiding

SYMPOSIUM—Automatic Grates and Chargers.

Paper—The U. G. I. Mechanical Generator, J. S. Haug, Consulting Gas Engr., United Engineers & Constructors, Inc., Philadelphia, Pa.

Paper—New Developments in the A.B.C. Grate, H. B. Young, Operating Dept., Chicago By-Product Coke Co., Chicago, Ill.

Paper—Description and Report of Operations at Kings County Lighting Co., R. E. Titus, Engr. of Prod., Kings County Lighting Co., Brooklyn, N. Y.

Paper—Operation of Automatic Grate with Soft Coal, G. T. Bentley, Asst. to Supt. of Mfr., Detroit City Gas Co., Detroit, Mich.

Paper—Operation of Automatic Grate with Soft Coal, L. J. Eck, Gas Engr., Minneapolis Gas Light Co., Minneapolis, Minn.

Paper—Low Cost Manufactured Gas (Description of Plant at Arlington, Mass., with operating results), Walter M. Russell, Gas Engr., Gas & Electric Improvement Co., Boston, Mass.

Paper—Plant for Mixing and Distributing Butane-Air Gas at North Manchester, Ind., T. J. Kelly, Gas Engr., Utilities Service, Inc., Fort Wayne, Ind.

Summary of Water Gas Committee Activities—Report of Committee, Alan E. Lockwood, Gas Engr., American Electric Power Corp., New York, N. Y.

Sixth Session

Friday, May 23—2:00 p.m.

Carbonization Committee Subjects—
Fred Denig and F. D. Lohr, Presiding

Paper—The Present Coke Situation, Paul Ryan, Statistician, A. G. A. Headquarters, New York, N. Y.

Paper—Effect of Coal Washing on Coke Properties, A. C. Fieldner, U. S. Bureau of Mines, Washington, D. C.

Paper—Coke as a Domestic Heating Fuel, Percy Nicholls, U. S. Bureau of Mines.

Paper—Present Coke Sizing and Methods of Preparation, H. H. Himsforth, The Consolidated Gas Co. of New York, Bronx, N. Y.; and E. W. Zimmerman, Koppers Construction Co., Brooklyn, N. Y.

Paper—Coke Marketing Problems, Alfred Fischer, Semet Solvay Engineering Corp., New York, N. Y.; and Robert R. Tibolt, New England Coal & Coke Co., Boston, Mass.

Our New Members

Saggars, Wayne, Public Service Co. of N. Illinois, Chicago, Ill.

Weller, Harvey C., Columbia Gas & Electric Corp., Pittsburgh, Pa.

Eddy, Allerton, Southern Natural Gas Corp., Birmingham, Ala.

Stanton, Frank J., Public Service Co. of N. Illinois, Chicago, Ill.

Runser, Frank B., Consolidated Gas Co. of New York, New York, N. Y.

Dorchester, Paul, Consolidated Gas Co. of New York, New York, N. Y.

Schreter, Frank L., Consolidated Gas Co., New York, N. Y.

Brooks, Austin J., American Meter Co., Albany, N. Y.

Ballantine, G. G., D. McDonald & Co., Albany, N. Y.

Darling, Daurice F., Boston Consolidated Gas Co., Boston, Mass.

Paullin, C. L., Central Power Co., Grand Island, Neb.

Flashive, Francis B., Columbia Gas & Electric Corp., New York City, N. Y.

Olson, H. Edwin, Columbia Eng. & Management Corp., New York City, N. Y.

Reynolds, Joseph A., New York and Richmond Gas Co., Stapleton, S. I.

Grant, Diego R., Primitiva Gas Co., Buenos Aires, Argentina

O'Neil, Robert D., Metric Metal Works, Erie, Pa.

Borden, Robert O., Metric Metal Works of Am. Meter Co., Inc., Erie, Pa.

Goldsmith, T. Ralph, Metric Metal Works of Am. Meter Co., Inc., Erie, Pa.

Blume, Sophia L., American Meter Co., New York, N. Y.

Hagan, Bernard A., Illinois Power & Light Co., Decatur, Ill.

Atkinson, E. M., Public Service Gas & Electric Co., Newark, N. J.

Booth, Edwin J., Midland United Co., Chicago, Ill.

Ehrmann, Herbert A., Midland United Co., Chicago, Ill.

Schneider, Christian A., New Amsterdam Gas Co., New York, N. Y.

Boat, Earl Murray, Central Hudson Gas & Electric Corp., Poughkeepsie, N. Y.

McCulley, David E., Bryant Heater & Mfg. Co., Cleveland, Ohio

Milano, Leonard, Utilities Power & Light Corp., Dubuque, Iowa

Rogers, Charles Talbot, John J. Griffin & Co., Philadelphia, Pa.

Dorsey, Albert, Consolidated Gas Co. of New York, New York, N. Y.

Going, Frank, Consolidated Gas Co., New York, N. Y.

Nye, Charles G., Consolidated Gas Co., New York, N. Y.

Senior, Arthur F., Public Service Co. of N. Illinois, Chicago, Ill.

Fiester, J. H., Electric Bond & Share Co., New York, N. Y.

Collins, Carl H., Mo. Power & Light Co., Kansas City, Mo.

Reilly, Brian A., Consolidated Gas Co., Bronx, N. Y.

Hamme, Spencer W., Helme & McIlhenny, Philadelphia, Pa.

Arvesen, Ralph A., Boston Consolidated Gas Co., Boston, Mass.

Bivens, E. D., Columbia Gas & Electric Corp., New York, N. Y.

Commercial Section

G. E. WHITWELL, Chairman

J. W. WEST, Jr., Secretary

E. R. ACKER, Vice-Chairman

Survey of Sales Managerial Practice Completed



Mr. West, Jr.

IN concluding his address on "The Economics of Load Building" before the recent meeting of the New England Gas Association, Colonel Oscar H. Fogg, vice-president of the Consolidated Gas Company of New York, said: "One of the gas industry's most pressing needs at the present time is a more rational alignment of the various components of our sales activities in accordance with sound economic principles. . . . No one person can hope to accomplish all this unaided and alone, but it can be accomplished definitely and without too much delay if we undertake it as an industry, working together."

To meet this need, the A. G. A. field survey of domestic, commercial, and industrial sales management practice was authorized by the Executive Board at the request of the Commercial Section during March, 1929, and this survey, covering fifty or more of the most progressive gas companies has recently been finished.

The findings of the survey, presented in a complete and detailed report, have been carefully studied by a representative committee of member company executives, and will furnish the basis for a Course of Study in Sales Management Practice which is now being developed.

The course, designed for the use of executives in charge of sales, sales managers, and other managerial executives in the gas industry, will be issued in a series of reports, especially prepared for detailed and comparative study. It will be ready soon and descriptive announcement will be sent to member company executives at an early date.

The survey made was comprehensive and extensive. It was broadly laid out

By J. W. WEST, JR.
Secretary, Commercial Section

with the major purpose of finding out the best methods in the gas industry for:

- I. Planning and formulating basic marketing programs.
- II. Meeting direct competition through the establishment of progressive merchandising policies, and by offsetting indirect competition through adequate promotional and service facilities.
- III. Developing closely knit and efficient selling organizations.

Particular emphasis was given to the following specific points, of immediate importance to a great many gas company sales executives:

1. Forecasting sales and establishing coordinated sales policies upon the forecast.
2. Accounting; i.e., distributing merchandise sales costs.
3. Purchasing, controlling and pricing stock.
4. Planning and scheduling promotional activities.
5. Hiring and training salesmen.
6. Compensating salesmen.
7. Controlling salesmen through reports and records.
8. Maintaining the morale of the sales force.
9. Handling complaints and building good will.
10. Cooperating with appliance dealers.

In carrying out the survey, staff members of the Business Training Corporation—which prepared the course in Domestic Gas Salesmanship—visited a representative list of the companies selected by the Committee. The companies selected were geographically representative of the conditions throughout the country and included both large and small properties, manufactured and natural gas. These companies were chosen on the basis of location, size of community served, nature of load, relations with holding companies, relations with electric

companies, and other factors which would give a representative, cross-sectional picture of the industry. Companies in every section of the country, from the Atlantic to the Pacific seaboard and in Canada, as well, were visited.

Six general lines of inquiry were followed:

1. CHIEF SALES EXECUTIVE. Interviews of broad scope were held with the chief sales executive of each company. Important problems of management were discussed with him, and he was asked to give free expression to his ideas and opinions relating to subjects of his own choosing and to such topics as compensation, dealer cooperation, accounting, new merchandising ideas, ways of developing public goodwill, and other subjects related to increasing the sale of gas. Each interview was reported verbatim by the interviewer.

2. DOMESTIC SALES MANAGERS. Forty-eight domestic sales managers were interviewed on all phases of the sale of domestic appliances, and the related managerial problems. In each interview a wide variety of topics were covered. Facts and opinions were sought relating to trends in the industry, methods of analyzing territory and establishing quotas, sales policies, the organization and handling of the sales force, the selection of salesmen, sales training, methods of keeping a check on sales efforts, advertising, morale building and relations with other departments. These were reported verbatim, and in addition a great volume of specific data, hundreds of form exhibits, supplementary documents, reports and charts were obtained which were among the most valuable materials of the Survey.

3. INDUSTRIAL SALES MANAGERS. Forty-six industrial sales managers were consulted on all topics relating to industrial sales management, and the interviews reported verbatim. The points covered with domestic managers were fully discussed with relations to the industrial gas problem as well as other subjects peculiar to industrial selling.

4. COMMERCIAL SALES MANAGERS. Interviews with commercial sales managers, reported verbatim, were had wherever commercial sales were not directly under the supervision of the domestic or industrial sales manager. The facts and ideas sought primarily to selling methods used with hotels, restaurants, apartment houses,

clubs, stores and institutional properties and the cultivation of architects and builders.

5. DOMESTIC SALES SUPERVISORS. *Forty-one domestic sales supervisors were interviewed to get their viewpoints and the benefits of their close contact with salesmen.* These interviews were reported in detail; in addition, the work of supervisors in the store and the field were observed and the results carefully reported and tabulated.

6. APPLIANCE MANUFACTURERS. *A number of appliance manufacturers were visited to get the benefit of their views on the sales practice of gas companies.* Their comments proved helpful in forming a complete picture of the gas sales situation.

All of these men contributed helpfully and fully to the survey and a wealth of excellent material was gathered upon which to base the course of study on Sales Management Practice to be made available to member companies. A detailed outline of what the program will contain will be available shortly.

It will be the aim of the course to make recommendations both on general sales policies and on sales managerial practices wherever one or more policies or plans have proved to be most successful; and wherever this is not possible, a comprehensive discussion of the factors to be considered in determining a company's general sales policies and sales management practices will be given in such detail as to assist the executive in charge of sales in determining his local policies in the light of existing conditions.

In order that the course may be thoroughly coordinated in its treatment of the discussions of general sales policies in relation to operating practices, rates, promotional activities, and other phases of the business, an Advisory Committee of executives in charge of sales has been appointed to consider and approve the discussions of these matters. Members of this committee are:

H. C. Abell, Electric Bond and Share Co., New York, N. Y.; C. M. Cohn, Consolidated Gas Electric Light & Power Co., Baltimore, Md.; R. E. Fisher, Pacific Gas & Electric Co., San Francisco, Cal.; O. H. Fogg, Consolidated Gas Co. of N. Y., New York, N. Y.; F. C. Freeman, Providence Gas Co., Providence, R. I.; R. W. Gallagher, The East Ohio Gas Co., Cleveland, Ohio; R. C. Hoffman, Atlanta Gas Co., Atlanta, Ga.; Samuel Insull, Jr., Midland United Co., Chicago, Ill.; W. A. Jones, Cities Service Co., New York, N. Y.; J. G. Learned, Public

Service Co. of Northern Illinois, Chicago, Ill.; S. E. Linton, Nashville Gas & Heating Co., Nashville, Tenn.; A. B. Macbeth, Southern California Gas Co., Los Angeles, Cal.; H. C. Morris, Dallas Gas Co., Dallas, Texas; C. E. Paige, Brooklyn Union Gas Co., Brooklyn, N. Y.; T. V. Purcell, The Peoples Gas Light & Coke Co., Chicago, Ill.; F. J. Rutledge, United Gas Improvement Co., Philadelphia, Pa.; J. K. Swanson, Minneapolis Gas Light Co., Minneapolis, Minn.; G. I. Vincent, Syracuse Lighting Co., Inc., 421 S. Warren St., Syracuse, N. Y.; F. S. Wade, Southern Counties Gas Co., 810 South Flower St., Los Angeles, Cal., and R. R. Young, Public Service Electric & Gas Co., Newark, N. J.

A working committee has been appointed to supervise all details in connection with this undertaking, and is now operating under the joint leadership of Chairmen E. R. Acker and H. O. Loebell.

The program of the Course will embrace four distinct points:

1. It combines a systematic study of the best sales management practices as disclosed by the survey with a discussion of methods for adapting these practices to any company's situation.

2. The study is to be based upon seven Procedure and Practice Reports, to be mailed at intervals of four weeks. They will present, wherever possible, definite recommendations to be considered and tried out by gas companies, in so far as they think it wise to do so. These reports and their bearing on local conditions are designed to be thoroughly discussed in a series of conferences between the men registered from each company. Conference guides will be supplied.

3. Experience and suggestion records which are to be filled out and sent in by everyone registered. These records will collect from all possible sources specific ideas and the results of actual tests under widely varying conditions of the methods set forth in each of the seven reports.

4. At the conclusion of the Course of study, a final report summarizing the views and experiences of all those registered will be issued.

The registration fee has been set at \$50 per person, covering all services in connection with the program. More than 700 executives in charge of sales, sales managers, and branch managers have indicated their intention to participate in this activity. So far as is known this is the first instance in which any trade association has undertaken to prepare a critical discussion

of the sales managerial practices of the industry covered.

When taken in connection with the Association's courses in Domestic and Industrial Salesmen's Training, its periodic committee reports and the annual regional sales conferences, it is felt that these analytical discussions will round out the Association's sales services to the industry and will place the Association in a position of having done all that any trade association can do to promote the use of the most successful sales policies and best selling methods.

Empire State Gas & Electric Association

(Continued from page 163)

of the Brooklyn Edison Company. Miss Ethel A. Conklin, chairman of the Women's Section of the Association, will address the meeting on women in the industry.

The meeting Friday morning will be opened by the Association's president, W. J. Welsh, vice-president, New York & Richmond Gas Company. An open discussion on "Collection Methods and Their Effect on Public Relations" will be led by A. R. Keller, of the Syracuse Lighting Company; J. W. Williams of the New York Power & Light Corporation, and W. G. Brown of The Brooklyn Union Gas Company.

Clifford E. Paige, vice-president, American Gas Association, and H. C. Hopson, of the Associated Gas & Electric System, will speak at one of the sessions.

The meetings will be held each forenoon, while the afternoons will be given over to inspection of office labor-saving devices, motor trips and recreation.

Southwestern Public Service Association

THE executives in the several branches of the public utility industry in the Southwest, hitherto combined in the membership of the Southwestern Public Service Association, at Dallas, Texas, have determined on a plan, which, it is believed, will considerably reduce overlapping association activities, without interfering in any way with the requirements of the companies and the industry. For the present, all conventions and similar activities of this Association are to be suspended, and the organization will be continued with the present Secretary, E. N. Willis, in that capacity. However, Mr. Willis announces that he will become Executive Secretary of the University Club of Dallas.

Publicity and Advertising Section

JAMES M. BENNETT, Chairman

ALLYN B. TUNIS, Secretary

DONALD M. MACKIE, Vice-Chairman

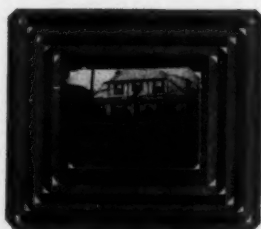
Personalized Direct-Mail Advertising Folder

WHAT is considered to be the most highly personalized direct-mail advertising folder ever developed for promoting house heating with gas is now being used with gratifying results by The Consolidated Gas Company of New York and affiliated gas companies in the Metropolitan area.

This advertising piece is called "Your Home," the feature being a distinct photograph of the customer's own house. The copy is exceptionally brief, and carries out the "your home" theme.

The folder utilizes in a different way the well-established fact that personalized advertising is very effective when it is possible to use it, according to Henry Obermeyer, assistant to the vice-president in charge of commercial relations for the gas company.

"Many of the prospects for gas heating in our territory own their own homes," Mr. Obermeyer says. "The occupants are proud of these homes, and particularly of the architectural appearance. We believe that the 'Your Home' folder capitalizes on this feeling of pardonable pride on the part of the home owner to a greater degree than any other folder we have used. The photograph of the house is bound to attract attention—first, because it is an actual picture of the prospect's home, and, second, because this idea has not yet been used to the extent of becoming trite or over-done.



Your Home

New Wrinkle in Direct-Mail Piece

"With an approach such as this folder gives, we feel that we have gained an excellent opportunity to tell the prospect of the advantages of gas fuel for heating his house, and that it is his house which we have in mind. Many of our customers have the opinion that gas for house heating is all right for

others, but too expensive for them. Any advertising which tends to emphasize to the prospect, that he, too, can afford gas heating in his home is bound to bring very satisfactory results."

The folder is sent only to a special list of prospects who are classified as "good." Later it is hoped to extend the mailing to cover all prospects in the company's territory.

The form of the folder is exceedingly simple. A good grade of paper is used, similar to that used for wedding announcements, and the French fold and the hand-addressed envelope also give the impression of a formal announcement.

The photographs are taken with a

Q.R.S. De Vry K-1 Still Camera, and the regular salesmen of the company snap the pictures during working hours. Each one of the folders carries the following line:

"The photograph of Your Home is used exclusively on this one folder."

The cost of the folder including the photograph is nominal, amounting to no more than any other well-printed mailing piece.

New Gas Main Makes Super-Fuel System

THE last link in a super-fuel system that embraces the greater Chicago area, and more, was put into service recently when gas was turned into a 20-inch main extending from the Crawford Avenue plant of The Peoples Gas Light & Coke Company, Chicago, to the mains of the Western United Gas & Electric Company at LaGrange.

Previous inter-connections have joined the Peoples Gas Company distribution system with those of the Public Service Company of Northern Illinois and the Northern Indiana Public Service Company.

While there is no merger of finances or corporate identities, the new inter-connection gives a unity to the gas supply of the greater Chicago area, and beyond, that assures a continuity of service, and eliminates duplication of investment in reserve gas-making equipment.

The Western United Company is known as the first company to operate a long-distance transmission system of manufactured gas at high pressures. Its chief gas plant is at Joliet, but its distribution mains extend as far as Harvard, a distance of about ninety miles. The Peoples Company, one of the largest manufactured gas companies in the country, has Chicago for its territory, and by the inter-connections with adjoining companies places its enormous gas-producing facilities at the disposal of the surrounding areas, at the same time being in a position to draw on other companies in case of a shortage.

Have You Secured Your A. G. A. Monthly Binder?

BINDERS for preserving your copies of The A. G. A. MONTHLY still are available. They may be had at a cost of \$1 each upon application to The Editor, The American Gas Association MONTHLY, 420 Lexington Avenue, New York, N. Y.

Accounting Section

J. L. CONOVER, Chairman

H. W. HARTMAN, Secretary

J. I. BLANCHFIELD, Vice-Chairman

Envelope Filling Machine For Gas Bills

IN line with the policy of the Accounting Section Committee on Development of Accounting Systems and Office Labor-Saving Devices to keep the members of the Section informed each month of new developments in office appliances, J. H. Ahrens of the Kings County Lighting Company, a member of the Committee, submits the following description of an envelope filling and sealing machine, used for sending out consumers' bills:

On June 1, 1927, The Kings County Lighting Company commenced the mailing of all gas bills to customers, and decided to enclose a return envelope for the customer's convenience, also a piece of literature, to be changed monthly. Prior to that date, the bills had been delivered by collectors, who attempted collection at the same time.

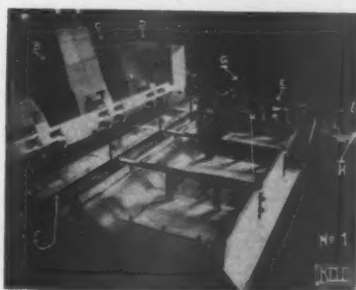
With our 100,000 accounts, we found that six clerks were required to do this work by the old method of hand-stuffing. However, we felt that such methods were not only costly but inefficient as well, and that there must be a machine capable of doing such a job. All we had to do was to try to find one.

We were fortunate in locating an inventor in New York City working on such a machine. The machine was in its experimental stage and it required some talk on our part to convince the maker that we were in earnest. After considerable pioneering work on our part, the machine was finally in a stage where it could be expected to do the work required, and on May 1, 1928, it was placed in service—the first of its kind to be used by a public utility company.

We took two of our messengers and made operators of them in but a few days. We immediately found no use for the other six clerks. During the past year, this machine has turned out an average of 2,800 completely stuffed envelopes per hour, averaging in some months as high as 3,200 per

hour. We consider this machine one of the best investments we have made in labor-saving devices.

A study of the accompanying photographs will help make the operation of this machine more understandable.



Two Views of Envelope Filling Machine

For simplicity, only a few places have been marked for identification, in accordance with the following code:

- A—Gas bill hopper.
- B—Return envelope hopper.
- C—Monthly circular hopper.
- D—Outgoing envelope hopper.
- E—Point at which envelope is filled.
- F—Friction rolls for stripping inserts.
- G—Automatic stops and motor starters.
- H—Sealed envelope passing to tray.

I might state first, that our circulars, also the gas bills have been folded in our own office on a folding machine. The hoppers are now filled

with their particular enclosures and the machine is started.

From point "A," a bill is stripped and thrown to the bed of machine. So-called "pushers" move the bill to a point opposite "B" where an envelope is placed on top of it. Both inserts are then moved along to opposite "C," where a circular is placed on top of them. All three inserts are then jogged into juxtaposition at point "E" with outgoing envelope which was stripped and passed from point "D." Fingers then open the back of the envelope and more "pushers" move the inserts into the envelope. The flap is then moistened, closed and sealed and the envelope passes along guide at "H" and out to the receiving tray, ready for the permit mailing machine.

During all three machine operations, the bills have been kept in the same geographical order in which the meters were read. The reason for this is that the bills are delivered to the Post-Office in the boxes that contained the empty envelopes, require no sorting at the Post-Office and are ready at once to be given to various letter carriers for delivery. We have the co-operation of the Postmaster in this respect, because we save him much time. Furthermore, our mail arrives at its destination much more rapidly.

This machine is manufactured in New York City. Anyone interested in such an operation or wishing to witness a demonstration, can have the opportunity, by addressing J. H. Ahrens, Kings County Lighting Company, Brooklyn, New York.

Combination Bill Printing and Addressing Machines

THE Accounting Section Committee on Development of Accounting Systems and Office Labor-Saving Devices announces the following items with reference to accounting machine development:

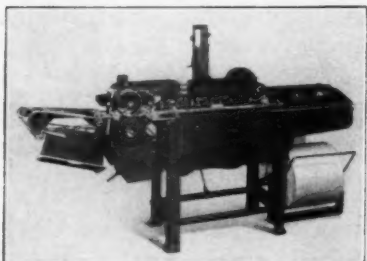
The Addressograph Company of Chicago, Illinois, announces development of a new combination form-printing and

addressing machine, especially adapted for printing and addressing public utility bills where volume of work is such as to make speed and low production costs important factors.

The new machine, known as model 3700, cuts the paper to proper size, perforates it, prints the form and fills in the name, address and descriptive data from the addressograph plate either on single forms or on forms with one, two or three perforated stubs. The forms can be prepared in quadruplicate, if desired.

The printing and addressing is done at a speed of 8,400 imprints per hour which is equivalent to a production of more than 2,000 completed bills per hour.

As shown in the accompanying cut, the paper stock is fed from a roll of blank paper through the perforation rollers and under a knife which cuts it to exact size. The maximum length of form that can be printed is 17 inches—maximum depth is six inches. After cutting, the paper is fed to the required positions to receive the successive ribbon impressions from



Automatic Form-Printing Addressograph

the addressograph plates and then passes along moving tapes to the printing unit where the form itself is printed and then discharged into a receiving rack.

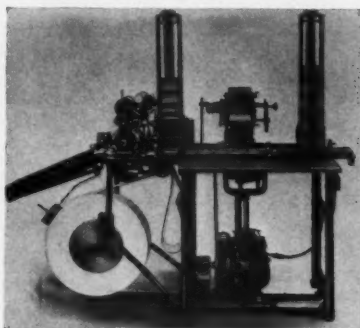
The rotary printing form is so arranged as to permit rapid insertion and removal of metal inserts for printing variable data such as dates, discount periods, etc.

Special attention has been given in the construction of the machine to automatic safety features, noiselessness and simplicity of operation. Aside from watching the operation, all that is required of the operator is to load and take out the plates and to replace the roll of paper once every 40,000 forms. The Addressograph Company states that one girl can easily operate two of these machines at once.

The Elliott Addressing Machine Company, of Cambridge, Massachusetts, has developed a combination bill printing and addressing machine specifically designed to solve public utility bill form preparation problems.

The new Elliott machine, in a continuous automatic operation, prints the bill form, then prints the dates, name, address and descriptive data as shown on the stencil and then perforates and chops off the completed bill from a roll of blank paper, at a speed of approximately 7,200 imprints per hour. Individual bills can

be from 2½ inches to 4 inches in width, from 10¾ inches to 17 inches in length and can have from one to four stubs.



Combination Bill-Printer and Addresser

The printing is done from electrotypes supplied by the Elliott Company. These electrotypes are fastened to the cylindrical printing drum in segments so that variable data can readily be changed. Printing can be done on both sides of the bill.

The Elliott address cards are made of fibre and can be stencilled on a regular typewriter. A single stencil prints its address as many times as required on the bill and the stubs. Then, as each bill is completely printed and addressed, the next stencil automatically comes into position to address the following bill and stubs. Stencil cards can be inserted and removed while the machine is running.

Missouri Association of Public Utilities

THE twenty-fourth annual convention of the Missouri Association of Public Utilities will be held May 1, 2 and 3 at Springfield, Mo. The business sessions will take place in the Kentwood Arms Hotel. The annual banquet and entertainment will be held on the evening of May 2 at the Shrine Mosque.

The membership of the organization comprises gas, electric, water and electric railway utilities in Missouri. Major T. J. Strickler, vice-president and general manager of the Kansas City Gas Company, is president of the organization. E. D. V. Dickey, manager of the Citizens Gas Company, Hannibal, Mo., is vice-president. Other officers are as follows: H. M. Patton, St. Louis, second vice-president; A. E. Bettis, Kansas City, third vice-president; Hermann Spoehrer, St. Louis, treasurer; F. D. Beardslee, St. Louis, secretary.

Among the speakers on the program will be Milton R. Stahl, chairman, Missouri Public Service Commission; T. H. Gideon, Mayor of Springfield; Dr. E. A. White, Chicago, Ill., director National Committee on the Relation of Electricity to Agriculture; Charles Gordon, New York City, managing director American

Electric Railway Association; H. A. Gallagher, manager Independence (Mo.) Water Co.; Mrs. Elizabeth Minish, Laclede Gas Light Co., St. Louis, Mo.; and M. B. Buckley, Kansas City (Mo.) Gas Co. Judge H. O. Caster, New York City, member of the Executive Committee of Henry L. Doherty & Co., will be the principal speaker at the banquet, May 2. A vaudeville entertainment and dance will follow the banquet.

Particular attention will be paid this year to the entertainment of the wives of delegates attending the convention. Tours to points of interest in the city, golf contest, card parties and similar activities for the women are being arranged by Hermann Spoehrer of St. Louis, chairman of the entertainment committee, who has successfully arranged the women's entertainment for several years at the association conventions.

A two-hour Open Forum to discuss knotty problems of utilities will be held, beginning at 11 a.m., at the Friday session.

Natural Gas Convention

(Continued from page 145)

F. F. Schauer, Equitable Gas Company, Pittsburgh, Pennsylvania.

C. N. Stannard, Public Service Company of Colorado, Denver, Colorado.

T. R. Weymouth, Oklahoma Natural Gas Corporation, Tulsa, Oklahoma.

W. S. Yard, Pacific Gas and Electric Corp., San Francisco, California.

Ladies Entertainment Committee: Miss Henrietta Bayle, chairman, and Miss Almira Dauenhauer, chairman ex-officio. Subcommittee chairmen are as follows:

Registration—Miss Eoline Salassi.

Dance—Miss Elsie Waggaman.

Boat ride—Miss Margaret Campbell.

Shopping or VIEUX CARRE—Miss Philo Tobin.

Theatre Party—Miss Ethel Ryan.

Transportation—Miss Alice Cooper.

Gas Stored in Wells Heats El Dorado

NATURAL gas stored in depleted wells by the Empire companies of Bartlesville, Okla., 8 to 12 months ago kept El Dorado, Kansas, warm during the extreme cold last January and February.

During the summer months when industrial and domestic demands were low, the Empire companies stored millions of cubic feet of gas from their system in dead or abandoned wells near El Dorado. This gas was called upon to serve the nearby city for periods of two, six and eight days at a time without any interruption of service. Although the storage idea is new in the Mid-Continent field and still in the experimental stage, it assured an adequate gas supply for El Dorado.

Manufacturers Section

F. G. CURFMAN, Chairman

C. W. BERGHORN, Secretary

E. S. DICKEY, Vice-Chairman

Box and Crate Bulletin

PRINCIPLES of Box and Crate Construction," is the title of Technical Bulletin No. 171, which will be issued soon by the Department of Agriculture. C. A. Plaskett, Forest Service, Forest Products Laboratory, Madison, Wis., is the author.

To quote the foreword by J. A. Newlin, well-known engineer in charge of the timber testing section of the Forest Products Laboratory, "This bulletin brings together the various principles involved in efficient box and crate construction and shows their interrelation. The application of the principles developed and recommended in this bulletin should aid in stabilizing the container industry, in reducing loss and damage, in making cheaper and more efficient containers, and in making possible the continued use of great quantities of low-grade and waste material produced in the manufacture of lumber."

"Since over 10 per cent of all the timber cut annually," the bulletin states, "goes into lumber for boxes and crates and in addition 7 per cent of the wood pulp produced annually is used for the manufacture of fiber containers, it is clear that a thorough understanding of the fundamental principles of box and crate construction will be reflected in the more efficient utilization of the wood of our forests."

Technical Bulletin No. 171 discusses all of the common types of boxes and crates, including nailed and locked-corner wooden boxes, cleated plywood boxes, wire-bound boxes, corrugated and solid fiber boxes, nailed crates, and wire-bound crates. Considerable space is devoted to formulas, rules, and general instructions for designing the various types.

One section of the bulletin deals with the special requirements and properties of container woods and classifies these woods into four major utility groups. Descriptions of standard tests for containers, the drying of container woods, a simplified table of comparative strengths for container woods, and proposed U. S. Government master specifications for several types of containers are features of the appendix.

While the supply lasts Technical Bulletin No. 171 can be obtained free from the Department of Agriculture, Office of Information, Washington, D. C.

Galveston Gas Company—First Texas Utility

AN old minute book of the Galveston Gas Company, recently brought to light, reveals the romance of the first public utility in Texas—the first gas company in the State.

It contains the minutes of the directors' and stockholders' meetings from the first one in 1856 through 1910, as well as other valuable records. From an historical standpoint, it is a priceless volume; from a literary standpoint, it is fascinating. Humor and pathos mingle in the stately, flowing phrases intended only to chronicle ordinary business happenings.

The Galveston Gas Company was chartered in 1856 by a special grant from the Texas Legislature—the only one ever granted to a Texas gas company—was organized by a group of pioneer Galveston citizens and business leaders, who guided the first gas company in Texas courageously and successfully through the mazes that beset the utilities today as well as seventy-four years ago.

Gas was turned on in Galveston on August 9, 1859, to forty-one consumers, for illumination only, and by the end of that year—four months later—103 consumers burned gas with a net profit of \$485.70. They hoped to reach an average daily consumption of 8,000 cu.ft. a day during the next year.

Gears Easily Repaired by Oxwelding

IN recent years the number of gears to be found in plant scrap piles has greatly diminished, as a direct result of the constantly increasing use of the oxy-acetylene method of economical repair. At almost any central welding shop in factory or mill, the plant welder will be frequently found engaged in building up or replacing broken gear teeth with welding blowpipe and welding rod.

A preheating furnace is usually dispensed with when putting new teeth on ordinary small gears. All the preheating necessary can usually be accomplished by local application of the blowpipe flame itself. The accompanying illustration shows a plant welder using such a procedure. The gear shown was part of the driving mechanism of a large limestone crusher. Its speedy reclamation by oxwelding prevented a serious delay at the mill.

Gears of a larger size than the one illustrated are best prepared for welding by thorough preheating. This may be accomplished by the use of a gas-fired preheating torch or, if the gear is very large, by constructing a temporary heating furnace of fire brick, using charcoal as fuel.

Many plant welders are skilled in building up missing gear teeth and are able to control the flow of the weld metal so that there is little machining to



Plant Welder Repairing Gear

be done when the teeth are completely built up. This technique should always be employed in the case of steel gears. Where teeth are to be built up in cast-iron gears, carbon blocks are sometimes used to facilitate control of the weld metal. Pieces of carbon block of suitable size are easily shaped with a file so as to form a mold on either side of the tooth to be built up. Carbon blocks are familiar welding accessories and may be obtained wherever welding supplies are sold.

Selling Water Heaters in New Way

WITH its mounted calliope blowing full steam, a truck bearing this music box and both coil and storage types of water heater is visiting many Texas towns in an appliance sales campaign being conducted by the Community Natural Gas Company and the Pittsburgh Water Heater Company.

Simultaneous with the arrival of the truck, a crew of six salesmen comes into town. These men divide the town according to distribution of meters, and make a preliminary call at each house to distribute advertising literature and to call customers' attention to special features of the sale. After the town has been covered once, the salesmen return to follow up the deals already discussed with prospective buyers.

The time spent in a town is governed by the number of gas consumers, but varies from three days to two weeks. The campaign began in northeast Texas last November, and will probably be continued throughout this year, since there are about 250 towns on the Community Natural Gas Company system. It is under the direction of the new business department of the company, assisted by the Pittsburgh Water Heater Company.

Industrial Gas Section

C. C. KRAUSSE, Chairman

C. W. BERGHORN, Secretary

D. W. CHAPMAN, Vice-Chairman

Mid-West Industrial Gas Sales Conference Opens April 18

THE next meeting of the Mid-West Industrial Gas Sales Council will be held at the Palmer House in Chicago, at 10 a.m., April 18. The program is as follows:

- I. "Control Equipment"—discussion to be led by O. M. Olson, Eclipse Fuel Engineering Company, Rockford, Illinois.
 1. Actual results such as saving in fuel and increased or improved production.
 2. Type of equipment best suited to certain applications, taking into consideration control limits and price of equipment.
 3. Automatic control equipment from the standpoint of sales argument.
- II. "Application of Gas to Neighborhood and Small Wholesale Bakeries"—discussion to be led by T. J. Gallagher, Peoples Gas Light and Coke Company, Chicago; A. A. Schuetz, Milwaukee

Gas Light Company, Milwaukee, Wisconsin; and S. B. Lee, Central Public Service Company, Rockford, Illinois.

1. Basis on which present installations were sold.
 2. Type of oven and conversion burner equipment used with comparisons of different types and necessary changes in oven construction.
 3. Rate and rate structure necessary to get this business.
 4. Measures taken to hold the load.
- III. "Continuous Vitreous Enameling with Particular Reference to Cost of Gas as Compared to Electricity"—discussion to be led by C. F. Hennessy, Public Service Company of Northern Illinois, Chicago.

These subjects are of general interest to the gas industry and a large attendance is expected at the meeting.

Fort Worth Hotel Uses Gas For All Operations

GROWTH of the Southwest is reflected in the number of new hotels. These hotels now are invariably using gas throughout all of their operations. The Blackstone Hotel, at Fort Worth, valued at \$1,500,000, is the newest of these large structures to be completed recently. One of its unusual features is the use of two Kewanee boilers, one 50-horse power and the other 150-horse power, the larger for use during the winter and the smaller for summer when the heating load is disconnected.

Each unit is equipped with the Schwan-Gillespie gas burner. Connected to the boilers are two hot water generators sufficient in size to meet

both winter and summer demands for hot water in the 300 rooms and eighteen suites of the hotel. During the winter from 25,000 to 31,000 cu.ft. of 1,000 B.t.u. gas is used per 24 hours to fuel the boilers alone. One large displacement gas meter with combined volume and pressure gauge is used to serve the boilers and a smaller meter of the same type is in use for the kitchens and balance of this load.

Regulators, convenient to the hotels' operating force, give any needed range of pressure up to about 15 pounds gauge. During the recent extreme cold spell, which goes on record as the lowest temperature over so prolonged a

period in 30 years, there was no interruption of service in the hotel's gas requirements. During this weather the rooms were kept at any desired temperature by means of the Dunham Return System with a maximum of three pounds steam pressure. In milder weather this pressure ranges from zero to 1/2 pound with 10 to 12 pounds of vacuum.

In the large kitchen of the hotel gas is used for everything from a burner especially prepared for singeing smaller feathers from chickens and other fowls, to the large gas-fired bake oven which turns out pastries and cakes much in demand by the hotel's clientele. The chef attributes much of his success to the close temperature control attainable by the use of gas.

Other gas-fired appliances in use in the Blackstone kitchen are ranges, gas toasters, automatic gas egg boilers, gas bamber tables, gas-equipped dish washers, bread warmers, and gas stock pots. There is also a gas vegetable cooker which is of especial value in retaining all of the vegetable flavors during the cooking process. In the coffee shop of the hotel, natural gas is used under the coffee urn and in heating a unit near the urn which keeps the cups warm.

A small gas-fired boiler is also used by the hotel in its pressing department. On this boiler an automatic pressure control gas regulator maintains a constant pressure of 60 pounds.

The Blackstone Hotel was gas-minded even before its completion, for in order to protect the light color of stone and terra-cotta used on the building the portable boiler serving a construction hoisting engine was gas-fired.

Florenz Ziegfeld to Pick Gas Service Beauty

Florenz Ziegfeld, glorifier of the American girl and noted producer, has agreed to select the winner of the second *Doherty News* Beauty Contest. Mr. Ziegfeld will pass on every picture that is submitted for the contest. Already several properties of the Doherty gas service group have entered their girls in the contest.

Process Oil Gas Plant Stands Peak-Load Test



Process Oil Plant at Windsor, Canada

LAST year, the General Oil Gas Corporation, of New York, installed a 6,000,000 cu.ft per day Dayton Process Oil Gas Plant for the Union Natural Gas Company of Canada, Limited, at Windsor, Ontario. This plant was required to provide an ample supply during severe cold spells and peak-load periods, it being necessary to augment the natural gas supply during such times for the City of Windsor and the adjacent border cities.

The border cities' municipalities are supplied with natural gas from the Tilbury field, located about forty miles from Windsor. It was considered economic and logical to meet the peak-load requirements of the above markets by erecting the auxiliary gas plant at the outskirts of the city, and mixing oil gas with the natural gas at that point.

The plant was completed, ready for operation, during November, at the close of which month a sudden cold snap of near-zero temperature set in, and caused an extreme peak-load demand on the natural gas system. The sudden increased line pressures resulted in a break in one of the transmission lines, at a point about twenty

miles from Windsor, the repairing of which occupied several hours. During this period the border cities were dependent upon slightly over one-half the transmission line capacity for their natural gas supply, which, owing to the severe temperatures, was inadequate.

The new plant was called upon to commence operation at short notice, and to furnish oil gas during this period at the rate of 2,500,000 cu.ft. per day. This gas actually was being introduced into the plant in less than an hour from the time word was received at that point. The cold spell lasted about three days, during the peak-load periods of which the plant functioned perfectly, and there was furnished to the border cities a mixed gas of a minimum of 900 B.t.u., containing, according to necessity, from 10 to 20 per cent oil gas, thus protecting the service to 16,000 consumers.

This plant consists of six one million cu.ft. per day gas generating units, and the entire plant is designed and built with all piping, drains and auxiliary apparatus for future expansion to a 12,000,000 cu.ft. per day

production. The gas is generated in the latest type apparatus, employing Connersville auxiliary pumps. After wet scrubbing and thorough cleaning with dry scrubbers, the gas is metered and stored in a million cu.ft. three-lift gas holder, wherein the oil is also stored with the use of a special oil storage ring located in the holder tank. From the holder the gas is pumped at 12 pounds' discharge pressure, by means of two-stage General Electric centrifugal compressors, to the intermediate natural gas line wherein the oil gas is mixed.

The mixing apparatus consists of a combination Smoot type pressure and volume control and a Thomas B.t.u. electrical auxiliary control which maintains a constant B.t.u. of the mixed gas. Experience to date has shown that the control functions perfectly, and will maintain the mixed gas B.t.u. within minus or plus 5 B.t.u. The recording calorimeter showed continuous record of constant B.t.u. value of the mixed gas for any set condition. A unique feature in connection with the volume control is a gauge graduated to read per cent of oil gas in the mixture, and it also serves as a check against flow meter readings and the recorded B.t.u. of the mixed gas.

Missouri Gas Survey Brings Out Facts

A recent survey of the gas industry completed by the Missouri Association of Public Utilities shows that around 87 per cent of the gas customers in the state have gas ranges and 56 per cent have storage hot water heaters.

The survey is based on reports from 29 gas companies which supply about 95 per cent of the gas used in the state. The following shows the use of gas equipment:

Of the total gas customers in the state (390,730) 343,779 have gas ranges in use; 219,847 have gas water heaters; 13,591 homes are heated by gas.

The last figure shows the strides which have been made during recent years when the fact is considered that four years ago only a few scattered homes were heated by gas. Cities having greatest number of homes heated by gas are: Kansas City, Webb City, St. Joseph, Webster Groves, St. Louis, Independence and Carthage.

Cities having largest percentage of gas ranges (in comparison with number of gas customers) are: Clinton, Kirksville, Webb City, St. Joseph, Webster Groves, Chillicothe, Brookfield, Cape Girardeau, Columbia, Carthage and Louisiana.

Monthly Summary of Gas Company Statistics

MARCH, 1930

Issued monthly by the Statistical Department of the American Gas Association
420 Lexington Avenue, New York, N. Y.

PAUL RYAN, Statistician

THE retardation characterizing general business and economic conditions during January was reflected in sales of manufactured gas utilities for the month, which showed an increase of only three per cent over the same month of the preceding year, according to reports to the Statistical Department of the American Gas Association from companies representing approximately 86 per cent of the manufactured gas industry. As of January 31 the customers of the reporting companies aggregated 8,919,063 while revenues for the month totaled \$34,884,673, an increase of some two per cent over January a year ago.

Most sections of the country reported little if any increase in domestic sales other than househeating, while in a great many regions the use of gas for industrial-commercial purposes registered declines of from one to five per cent. In numerous cases, however, this temporary retardation in sales of gas for factory and industrial operations was offset by pronounced

increases in gas used for househeating purposes.

In New England, while industrial sales declined slightly, househeating sales increased by 30 per cent, and gas consumed for this purpose constituted 15 per cent of the total sales for the month in this region.

In the East North Central states, while industrial sales showed a slight increase, househeating sales gained nearly 25 per cent. The most pronounced gains in this region occurred in Indiana, where total sales were up nearly seven per cent, influenced in part by an increase of over 40 per cent in gas used for househeating purposes. Despite a decline of more than four per cent in industrial sales, Michigan reported total sales for the month about equal to those of a year ago, as househeating sales increased some 26 per cent. Illinois also reported a 22 per cent increase in househeating sales, while gas used for this purpose constituted nearly 13 per cent of the total sales for the month in this state.

During January the gas produced by these reporting companies declined by nearly five per cent. The total manufactured and mixed gas produced and purchased for distribution, however, gained two per cent, owing largely to an increase of 27 per cent in by-product coke oven gas purchased.

In addition to the data on manufactured gas companies, there is shown this month a comparative tabulation of customers, sales and revenues for a group of 27 of the larger natural gas distributing utilities. As of January 31, the customers of the group aggregated 2,015,834, while sales of natural gas totaled nearly 23 billion cubic feet for the month, an increase of eight per cent from the same month of the year previous.

It is hoped to add materially during the coming year to the number of reporting natural gas utilities, so as to render available current information on this phase of the industry comparable in scope and content to that now available on manufactured gas.

COMPARATIVE STATISTICS OF 145 MANUFACTURED GAS COMPANIES FOR MONTH OF JANUARY, 1930

	Month of January		Per Cent Increase
	1930	1929	
Customers	8,919,063	8,635,138	3.3
Gas Sales (MCF)	33,419,430	32,337,173	3.3
Revenue (Dollars)	34,884,673	34,074,501	2.3
<i>Gas Produced and Purchased (MCF)</i>			
<i>Gas Produced</i>			
(a) Water Gas	19,101,948	20,886,065	— 8.6
(b) Coal Gas	2,882,108	2,908,064	— 0.9
(c) Oil Gas	1,066,015	953,158	11.8
(d) Coke Oven Gas	4,056,905	3,866,275	4.9
(e) Reformed Oil Still Gas	167,740	—	—
(f) Total Gas Produced	27,274,716	28,613,562	— 4.7
<i>Gas Purchased</i>			
(a) Coke Oven Gas	10,116,501	7,979,042	26.8
(b) Oil Still and Natural Gas	289,313	302,491	— 4.4
(c) Total Gas Purchased	10,405,814	8,281,533	25.6
Gas Produced and Purchased	37,680,530	36,895,095	2.1

COMPARATIVE STATISTICS OF 27 NATURAL GAS COMPANIES FOR MONTH OF JANUARY, 1930

Customers	2,015,834	1,959,428	2.9
Gas Sales (MCF)	22,827,239	21,090,415	8.2
Revenue (Dollars)	12,513,538	12,250,616	2.1

Associations Affiliated with A. G. A.

Canadian Gas Association

Pres.—Kenneth L. Dawson, Nova Scotia Light & Power Co., Ltd., Halifax, N. S.
Sec.-Tr.—G. W. Allen, 21 Astley Avenue, Toronto.

Colorado Utilities Association

Pres.—H. S. Robertson, Denver Tramway Corp., Denver, Colo.
Sec.-Tr.—O. A. Weller, Public Service Co. of Colo., Denver, Colo.

Empire State Gas and Electric Association

Pres.—William J. Welsh, New York & Richmond Gas Co., Staten Island, New York.
Chairman Gas Section—R. Van Vliet, New York & Richmond Gas Co., Staten Island, N. Y.
Sec.—C. H. B. Chapin, Grand Central Terminal, New York, N. Y.

Illinois Gas Association

Pres.—H. T. East, Public Service Company of Northern Illinois, Chicago, Ill.
Sec.-Tr.—George Schwaner, 305 Illinois Mine Workers Bldg., Springfield, Ill.

Indiana Gas Association

Pres.—C. L. Kirk, Citizens Gas Co., Indianapolis, Ind.
Sec.-Tr.—F. W. Budd, Central Indiana Gas Co., Muncie, Ind.

Michigan Gas Association

Pres.—A. I. Snyder, Detroit City Gas Co., Detroit, Mich.
Sec.-Tr.—A. G. Schroeder, Grand Rapids Gas Light Co., Grand Rapids, Mich.

Mid-West Gas Association

Pres.—E. H. Vieregg, Central Power Co., Grand Island, Nebr.
Sec.-Tr.—Roy B. Searing, Sioux City Gas & Electric Co., Sioux City, Iowa.

Missouri Association of Public Utilities

Pres.—T. J. Strickler, Kansas City Gas Co., Kansas City, Mo.
Sec.-Tr.—F. D. Beardslee, 315 N. 12th St., St. Louis, Mo.

New England Gas Association

Pres.—H. Vittinghoff, Stone & Webster, Inc., Boston, Mass.
Exec. Sec.—C. D. Williams, 41 Mount Vernon St., Boston, Mass.

Chairman Operating Div.—Isaac T. Haddock, Cambridge Gas Light Co., Cambridge, Mass.

Secretary Operating Div.—H. G. Taylor, Lawrence Gas & Electric Co., Lawrence, Mass.

Chairman Sales Div.—J. H. Sumner, Cambridge Gas Light Co., Cambridge, Mass.

Sec.-Tr. Sales Div.—A. M. Slattery, Hoffman Heater Co., Boston, Mass.

Chairman Industrial Div.—L. B. Crossman, Boston Consolidated Gas Co., Boston, Mass.

Sec.-Tr.—Industrial Div.—Chas. H. O'Donnell, Boston Consolidated Gas Co., Boston, Mass.

Chairman Acctg. Div.—R. D. Washburn, Massachusetts Lighting Co., Boston, Mass.

Sec.-Treas. Acctg. Div.—Otto Price, Boston Consolidated Gas Co., Boston, Mass.

Chairman Manufacturer Div.—T. H. Piser, Welsbach Co., Boston, Mass.

Sec.-Treas. Manufacturers Div.—J. H. McPherson, 250 Stuart St., Boston, Mass.

New Jersey Gas Association

Pres.—R. A. Koehler, Public Service Electric & Gas Co., Newark, N. J.
Sec.-Tr.—H. E. Cliff, Public Service Electric & Gas Co., Newark, N. J.

Ohio Gas and Oil Men's Association

Pres.—L. K. Langdon, Union Gas & Electric Co., Cincinnati, Ohio.
Sec.-Tr.—Wm. H. Thompson, 811 First National Bank Bldg., Columbus, Ohio.

Oklahoma Utilities Association

Pres.—T. H. Steffens, Sand Springs Railway Co., Sand Springs, Okla.
Mgr.—E. F. McKay, 1020 Petroleum Bldg., Oklahoma City, Okla.

Pacific Coast Gas Association

Pres.—F. H. Bivens, Southern Counties Gas Co., Los Angeles, Calif.
Mang. Dir.—Clifford Johnstone, 447 Sutter St., San Francisco, Calif.

Pennsylvania Gas Association

Pres.—W. A. Norris, Lebanon Valley Gas Co., Lebanon, Pa.
Sec.-Tr.—Frank W. Lesley, Pennsylvania Gas & Electric Co., York, Pa.

Pennsylvania Natural Gas Men's Association

Pres.—Geo. E. Whitwell, Equitable Gas Co., Pittsburgh, Pa.
Sec.-Tr.—B. H. Smyers, Jr., 435 Sixth Ave., Pittsburgh, Pa.

Southern Gas Association

Pres.—D. H. Levan, Jacksonville Gas Co., Jacksonville, Fla.
Sec.-Tr.—G. H. Schlatter, Birmingham Gas Co., Birmingham, Ala.

Southwestern Public Service Association

Pres.—Knox Lee, Southwestern Gas & Electric Co., Marshall, Texas.
Chairman Gas Section—Frank L. Chase, Lone Star Gas Co., Dallas, Texas.
Sec.—E. N. Willis, c/o University Club, Dallas, Texas.

The Public Utilities Association of Virginia

Pres.—C. B. Short, Roanoke Railway and Electric Co., Roanoke, Va.
Sec.—C. O. Robertson, P. O. Box 537, Roanoke, Va.

Wisconsin Utilities Association

Pres.—G. W. Van Derzee, The Milwaukee Electric Railway & Light Co., Milwaukee, Wis.
Exec. Sec.—J. N. Cadby, 105 Wells St., Milwaukee, Wis.

Twelfth Annual Convention of the American Gas Association
Atlantic City, N. J. - - - October 13-17, 1930

Employment Bureau

SERVICES REQUIRED

Old Established Manufacturer of small gas appliance accessories located in the Middle West has opening for man with creative or inventive ability for the design and development of new devices. State age, education, experience and salary desired in first letter. 0155.

Sales Engineer wanted by large public utility in the Middle-West. Experienced in commercial and residential heating. Must be a high school graduate. College graduate from an engineering course preferred. Permanent position. Please state age, experience, education and salary expected. 0158.

Wanted—Assistant to executive, thoroughly experienced engineer-salesman, capable as organizer and competent to analyze and develop house heating, industrial applications and appliance sales. Prefer single man although not essential. Must be firm believer in stability of gas industry, energetic and of unquestioned integrity. Must be able to submit record of achievement. 0160.

Experienced industrial gas salesmen for large operating gas company. 0163.

Salesmen to sell gas to industries. Experienced men preferred. 0164.

Graduate gas engineer wanted by Eastern New York public utility. Five or six years experience in gas production and/or distribution and transmission work in connection with high and low pressure systems. Give age, education, experience and references. 0165.

Well known appliance manufacturer has opening for office manager to handle correspondence, maintain and initiate contacts with gas company sales executives and dealers. Man having sales experience or who has acted as appliance manufacturers' representative preferred. Salary to start \$250 to \$300; full details of experience, age, etc., must be outlined. Office and plant located at Newark, N. J. 0166.

Sales engineers to handle line of motor operated valves, low temperature pressure and combustion safety controllers. Men 25 to 35 years with college training preferred. Familiarity with process control field advantageous. 0167.

Practical industrial gas engineer experienced in erection and installation of burners and furnaces in industrial plants, capable of developing a new field. About 30 years of age and good personality. Not a high pressure orator, but rather of the type generally accepted as convincing, having a good mind for calculation and appreciating the opinions of others. Salary to start \$200 to \$250. 0168.

Industrial gas sales engineers by Public Utility in Middle West. College graduates in engineering courses preferred. Please state age, experience, education, and salary expected. 0169.

Supervising engineer for large organization with experience in natural gas work and preferably also in valuation and rate making. Splendid opportunity for right man. 0170.

SERVICES OFFERED

Public Utility Executive, capable management, medium-sized property, has had long experience all branches both gas and electric utilities, versed in sales management, public relations, accounting, rate revision and Commission presentation. Desire con-

nection with Public Utility where residence in or near New York City is possible. 312.

Executive with successful organizing and technical experience wants to make a change. 316.

Successful industrial engineer of several years broad experience; also technically trained in production and distribution; college graduate. 317.

Industrial sales engineer with managerial sales experience in natural, mixed and manufactured gas territories in house heating and appliance manufacturing. Prefers East or Middle West location. 318.

CONFIDENTIAL SERVICE

A confidential service available to members, whereby those seeking men and those seeking positions may be brought together; a part of A.G.A. service to which all members are entitled, without charge, any time they choose to avail themselves of it. For those who may not desire to advertise, a special qualification form, also confidential, is available, which may be filed for consultation when advising companies seeking the services of executives, engineers, operators, salesmen, and others.

Company and individual advertisers are requested to inform the Employment Bureau immediately a position has been filled or accepted; all advertisements should be received at A.G.A. Headquarters not later than the seventh of the month to insure insertion in the next issue.

Combustion Engineer. Post graduate in chemistry. Specialist in application of gas industrially (manufactured and natural). Long experience in sales engineering with strong background of diversified industrial research. Unusually familiar with gas technology. A practical, resourceful man. Gets along anywhere. Seeks greatest opportunity for service and advancement. 319.

Gas Engineer with technical education and over fifteen years' experience in the design, construction and operation of all types of coal carbonizing plants desires to make a connection where training and experience can be used to advantage. 320.

Merchandising Manager desires to change to South or West. Twenty years in gas and electric merchandising. Thoroughly familiar with industrial, commercial and domestic appliances, as well as refrigeration, ranges and small electric appliance merchandising. Can handle men and has a credible record of achievement. 321.

Gas Sales Executive, now completing a successful three years' load building program of a large Middle West Natural Gas Company. Capable sales executive and organizer with a technical and legal training. 322.

Sales Manager with gas and electric company or gas alone. Prefer Connecticut or New York State. Eighteen years' experience. 323.

Over twenty years of experience with one public utility company in all angles of the gas industry are behind the writer of this advertisement. He has been Constructing and Operating Engineer on both Plant and Distribution work, Sales Manager, Advertising and Publicity Manager and a successful handler of employees and the public. He possesses good health and has the qualities of initiative, versatility, adaptability and promotion of goodwill. His natural talents are executive and managerial. He is not shooting at the stars, but desires a position of responsibility where his experience and wide range of activity will be of value to his employer. 324.

Available, new business manager or executive's assistant. Age 35. Married. Graduate Engineer, with coal gas and water gas plant experience and successful industrial gas and house heating management experience in large companies. Have had ten year connection in aggressive companies in the gas industry. 325.

Young man, 32, with eight years experience in number of combination companies, with single firm, desires position of Assistant to Executive. 327.

Distribution, Plant or General Foreman with medium size or small gas plant. Twenty-five years experience in water gas manufacture and distribution work. Married. Good references. South preferred. 328.

Manager-Engineer, technical man, nineteen years experience in coal and water gas operation, distribution, city and industrial plant design and construction; familiar with recent developments in production and modification of gases; now employed, desires change. 329.

Technical and practical gas engineer now employed as manager of small property desires a position as production engineer over a group of properties. Capable of putting gas production and boiler plants on a money saving basis. 330.

Executive with twelve years natural and manufactured gas distribution, utilization and sales experience, technical graduate. Married. Age 35. Desires permanent connection with utility in sales or executive capacity. Capable of handling any load building activities domestic and industrial. Best of references. Available immediately to any connection that offers a future. 331.

Experienced sales engineer specializing in design and sale of carbonization and auxiliary plant equipment. Good organizer, with analytical ability and wide acquaintance in Canada and United States. 332.

Gas engineer having wide experience in all departments of business, construction, manufacturing, distribution, sales and appraisal—also knowledge of the sale and handling of by-products, and having executive experience desires connection as manager or superintendent or as engineer with holding company. Could handle combination gas and electric company. Can furnish best of references. 333.

Industrial and house heating engineer with nineteen years experience in the natural gas industry; capable of compiling manuals and organizing departments with proven results; desires position as such, or manager of small property. 334.

Technical man, age 34, married. Eleven years experience in laboratory and plant control of coal and water gas manufacture. Open for position as chemist, assistant to superintendent or foreman. 335.

Advertising and Publicity man. An experienced writer with advertising agency background. Knows the public utility field. Makes distinctive layouts and understands production. Not the go-getter type but a quiet likeable fellow with a flair for getting things done. Age 30. Married. 336.

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